ESTABLISHED IN 1872

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With Which Is Combined

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Dalhousie News Print Mill Ready for Opening

Formal Inauguration Ceremony For First News Print Mill Established In New Brunswick Scheduled for March 14—New International Plant Is Designed For Four Machines With Capacity of 550 Tons—Two Machines Now Installed Capable of Producing 250 Tons Daily —Other Two Machines May Be Set Up This Summer

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 3, 1930.—Official announcement has now been made that the 250-ton news print mill of the International Paper Company at Dalhousie, N. B., will be formally opened on March 14. The mill was designed for a capacity of 550 tons of news print per day, and while at present only two machines are installed, capable of producing 250 tons, it is planned to instal two additional machines, which, it is said, may be set up during the coming summer.

Work on the project has been under way for something like eighteen months, and it has included not only the construction and equipment of the mill, but also a dam on the Carlo River and a pipe line to supply fresh water for the mill operations, and a 104-mile hydro-electric transmission line from Grand Falls to Dalhousie. In addition the company has inaugurated an extensive housing development for the benefit of its employees. A staff house and a number of other dwellings have already been completed.

The Premier of New Brunswick, the Hon. J. M. B. Baxter, will operate the electric switch setting the mill in operation. Events of the opening day will begin with the arrival at Dalhousie in the morning of special trains bearing Government officials, officers and directors of the International organization and their guests. Guides will take the party through the mill, explaining the various operations in transforming New Brunswick pulpwood into news print paper.

At 12:30 luncheon will be served at the mill, a portion of the paper storage building having been transformed for the occasion into a dining hall. Howard P. Robinson, of St. John, as master of ceremonies, will call upon the Lieutenant-Governor, the Premier, A. R. Graustein, president of New Brunswick International Paper Company, and others, for addresses.

It will be at this luncheon that Premier Baxter will close the circuit between the mill and the power plant of the St. John River Power Company at Grand Falls, over a hundred miles away.

This is the first news print mill to be established in New Brunswick, and it is expected to aid materially in the prosperity of the Province.

Mersey Mill Operating Satisfactorily

The recently-opened news print mill of the Mersey Paper Company, the first news print mill to be established in the Province of Nova Scotia, is operating satisfactorily, and the plant is expected to reach the full production of 250 tons per day by the middle of April. Tuning up of the machines is progressing favorably; and contracts received are sufficient to keep them busy for some time to come.

The *Markland*, a ship built specially for news print shipments, has already proved of inestimable value to the company. It is now on its fourth trip to New York with a cargo of news print for large publishers. The relatively low cost of water shipment, it is said, will help materially to keep down operating costs of the company.

Canada Power & Paper Corp.

At a directors' meeting of the Canada Power and Paper Corporation in Montreal, C. R. Whitehead was made general manager. This change was brought about as a result of the recent arrangement whereby Port Alfred Pulp and Paper Corporation and Wayagamack Pulp and Paper Company, Ltd., became part of the Canada Power and Paper Corporation. Mr. Whitehead was president of the Wayagamack Company when the arrangement was completed.

The other officers remain as before, viz., Sir Herbert Holt, chairman of the board; George Chahoon, Jr., president; and George M. McKee, vice-president, and managing director.

The annual report of the corporation, which will shortly be available, will, it is understood, show a moderate sum applicable to surplus after payment of bond interest, taxes, depreciation, depletion and interest and dividends on the bonds and preferred stocks of subsidiary companies.

It is understood that the gross earnings of the corporation, including its two newly-acquired subsidiaries, Port Alfred and Wayagamack, will show some reduction from the previous year, owing to the lower demand for news print, proportionate to capacity.

Fraser Earnings Declined

The annual report of the Fraser Companies, Ltd., shows a sharp decline in earnings for the year ended December 31 last, as compared with the previous year, and the unfavorable showing is accentuated by deduction of heavier interest charges.

The operating profit for the 1929 year was $1,419,961 as compared with $1,765,154 in 1928. Interest charges against the 1929 figure were $1,391,996 as against a comparative 1928 figure of $837,355. The 1928 net income of $434,633 compares with a deficit of $711,097 in the latest report.

The president, Archibald Fraser, in his remarks to the shareholders gives reasons for the decreased earnings during the past year. He says:

(*Continued on page 80*)

Activities of the Paper Mills in Wisconsin

Due to Highly Competitive Conditions, Eddy Paper Corp., of Milwaukee, Reports Unfavorable Earnings For 1929, Although Balance Sheet Shows Strong Position — President J. W. Kieckhefer Predicts More Consolidations—Miscellaneous News of the Industry

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 3, 1930.—Highly competitive conditions and low prices are held responsible by J. W. Kieckhefer, president, for the unfavorable earnings showing in 1929 by the Eddy Paper Corporation, Milwaukee, Wis. Net profit was $386,022.58 with all charges deducted except depreciation, and $908.66 after depreciation. In 1928 the earnings were $524,284.53 before depreciation and income taxes, and $136,814.78 after. The company has 165,000 shares of common stock outstanding.

A stronger financial condition is shown by the balance sheet, however. Current assets at the year end totaled $1,878,184.40 and current liabilities were $432,994.07. A year previous the current assets were $1,923,867.11 and current liabilities $730,854.45. Net sales in 1929 were $7,045,998.40, against $6,065,467.15 the preceding year. Eddy paper plants are located in Milwaukee, Chicago, Three Rivers, Mich., and White Pigeon, Mich. There has been little improvement in the competitive conditions, Mr. Kieckhefer says, and he believes more consolidations will be the result.

Imported Wire Tariff Rate

Fourdrinier wire manufacturers are disappointed in the United States Senate's action in cutting the ad valorem tariff rate of 55 per cent on imported wire to 40 per cent, but have not given up the fight, according to G. E. Buchanan, secretary-treasurer of the Appleton Wire Works, Appleton, Wis. The industry will ask a hearing when the bill goes back to conference between the senate and the house to iron out the differences. The 40 per cent rate means only about 2½ cents a square foot of wire cloth, but a 55 percent rate would add 6 or 7 cents and help to close the gap between the cost of manufacturing wire here and abroad. The wire companies would rather have no increase in the tariff at all than take the 40 per cent, Mr. Buchanan said.

Paper Lace Output Expanding

The ability of the American Lace Paper Company, Milwaukee, Wis., to carry on the quantity reproduction of paper lace so skillfully that it is an exact duplicate of hand made lace, and in some cases even better, is shown by the demand for the lace doilies in schools where lace making is taught. The finest museum pieces are being photographed carefully and skilled engravers are employed to make dies. Even the threads of the cloth are worked into the paper so the copy is exact. The company was founded by Robert Kieckhefer in 1916 and has moved several times to take care of a growing business until today it maintains an immense plant in Milwaukee, with most of its machinery designed by company engineers and made in its own machine shop.

News of the Industry

More than 350 executives and employees of paper mills and other industries attended part or all of the sessions of a three day shop maintenance school conducted last week by the Schlafer Hardware Company, Appleton, Wis., jobbers of paper mill supplies. Experts from various tool factories were on hand to discuss their products. A dinner was held on the second evening at which L. M. Blakey, of the Hardware Mutual Casualty Company, spoke on protective methods to insure industrial safety.

Appleton will close its annual safety school with a banquet on March 4, according to present plans. George P. Hambrecht, state director of vocational education, will be the speaker. Weekly sessions have been conducted, with a large attendance from paper mills.

Products of the Marathon Paper Mills Company and the Mosinee Paper Company formed the basis of a unique industrial display conducted recently at the public library at Wausau, Wis. These articles in various stages of manufacture were exhibited for the education of the public.

Additional expansion has been found necessary at the plant of the George Banta Publishing Company, Menasha, Wis. Work has been started on a third story for the original factory building. It will be 90 by 135 feet in size and of brick and concrete. The addition will house additional composing room facilities and storage. C. R. Meyer & Sons Company has the contract.

Added strength has been given the opposition to the reopening of the Minnesota and Ontario eight-year-old freight rate case through a decision of the Wisconsin Paper and Pulp Manufacturers Traffic Association to enter the fight. This body has added its brief to several others before the Interstate Commerce Commission asking that the petition of the Central Freight Association be denied. The manufacturers contend that there is no basis for reopening the case, because tariffs now fixed by the commission are satisfactory and the decisions should stand.

Employees of the Hoberg Paper and Fibre Company and the Fort Howard Paper Company took part in a three day safety school conducted at Green Bay, Wis., by the United States Bureau of Mines. Alfred B. Hoftiezer conducted instruction in various types of first aid.

A safety school also is being conducted at Marinette, Wis., and is now in its third week. The speaker at the last session was T. Alfred Fleming, of the National Board of Fire Underwriters, New York City. His subject was "Dollars That Die and Dollars That Live."

The First National Bank, Appleton, Wis., where much of the paper mill business of the Central Fox River Valley is handled, has split its stock on a ten for one basis, issuing ten shares of $10 par each for every $100 share. The present bid is $43 a share, equivalent to $430 on the old stock, which previous to the splitup was quoted at $380 bid. F. J. Sensenbrenner, president of the Kimberly-Clark Corporation, is vice president of the bank.

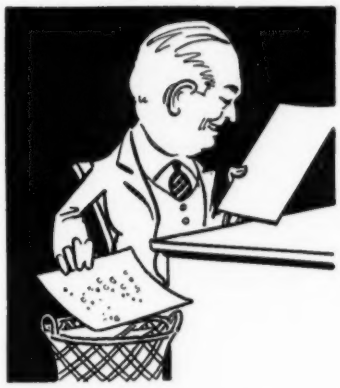
Mrs. Mary E. Whiting, of Oshkosh, Wis., left an estate of $250,000, according to records filed in probate court. The entire sum is bequeathed to her daughter, Kathryn R. Whiting. She was the widow of the late William T. Whiting, paper manufacturer of Stevens Point, Wis.

F. J. Harwood, president of Appleton Woolen Mills, has been elected president of the Eagle Manufacturing Company, Appleton, Wis., a machinery corporation. Mr. Harwood succeeds Albert W. Priest, pioneer of the paper industry, who died recently.

The Kimberly-Clark Corporation had a fatal accident at its newly acquired Lakeview mill at Neenah, Wis., last week. Matthew Van Groll, a construction electrician, was electrocuted when he came in contact with a mill switchboard while he was painting covered cables. The accident happened while his helper was absent for a few moments.

Mrs. Mary E. Whiting, widow of William T. Whiting, late paper manufacturer, died last week at her home at Oshkosh, Wis. Her husband formerly owned and operated a mill at Stevens Point, Wis., and died in 1923.

Announcement is made of the death on Friday, February 21, of Walter R. Wheaton, manager for many years of the Pulp Wood Company, Appleton, Wis. He had been ill since December, when he submitted to an operation.



EVERY BUYER APPRECIATES PAPER THAT IS REALLY CLEAN

Centrifined paper—paper that is really clean—has universal appeal. It makes every buyer sit up and take notice.

You can strengthen your position with old customers, gain new customers, by giving them paper that has no specks. And you can make this new quality paper at a greater profit, because Bird Centrifiners* bring about a substantial increase in No. 1 sheets.

Ask us for complete information.

*Manufactured under license from the Centrifugal Engineering and Patents Corporation, owners of the Erkensator patents.

BIRD MACHINE COMPANY
SOUTH WALPOLE ★ MASSACHUSETTS

NOW YOU CAN MAKE PAPER THAT IS REALLY CLEAN . . .

USE BIRD CENTRIFINERS

3808

Bright Outlook for Paper Industry in Chicago

Easter Should Climax Splendid Seasonal Demand For Practically All Standard Grades of Paper —Fine and Tissue Paper Manufacturers Anticipate Extension of Business — Gradual Upward Trend In Book Papers Beginning—Paper Board Market In Fair Shape

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 3, 1930.—Bringing back with them new ideas for going after business the Chicago representatives at the New York meetings report that March already looks like a good month as far as Chicago paper circles are concerned. A few of the lines are assured of good business from now until late spring inasmuch as Easter for them climaxes a splendid seasonal demand. Tissues, in particular, are expecting a favorable business. Fine papers will soon begin to feel the stimulated demand arising from preliminary plans for school commencements, announcements, etc.

In the Other Markets

In the other markets, news print is reported at running about 70 per cent in production and delivery with spring business counted on to help materially. A gradual upward trend in book is beginning with the market steady and prices reported firm. The price situation must still improve a good bit to make the board market what it should be around here. Otherwise this market is in fair shape with good prospects. Some disruption in prices in wrapping paper is being overcome gradually. High grades of waste paper are improving with the lower grades also in fair shape and gradually getting better. Ground woods have also improved.

Paper Merchants Discuss Conditions

An innovation in the conducting of its meetings is being tried successfully by the Chicago Paper Association. Each meeting is conducted by either one of the four officials of the organization. Leo S. Altholz, chairman of the board, presided at the meeting on February 25. D. F. Peck, president, Earl Beier, vice president in charge of industrials, and Walter Schulman, vice president in charge of retail sales, will all speak on alternate meetings before Mr. Altholz is slated again. According to Mr. Peck, this method is an ideal one to keep interest alive, to provide different slants on various problems, to stimulate attendance and to do constructive work.

Business Conditions

At the Tuesday, February 25, meeting at the Bismarck Hotel, a large number of executives took as the keynote of the program present business conditions in Chicago. The symposium taken revealed that business in lines sold by members of the Chicago Paper Association was not quite up to par but that the depression was only slight and not likely to be of long nor of injurious effect. The paper men took the enlightening view that it would not be wise to endeavor to build volume at the expense of profit, believing that each member should go ahead normally, making the best of the minor depression, refraining from any price cutting and maintaining rigid standards as to products and service. The National Paper Trade Association meetings in New York were also discussed as business transacted there affected the Chicago Paper Association. The members also continued their efforts to build up a sound credit program and to perfect a credit interchange bureau.

Paper Industry in Illinois

Illinois is one of the foremost states in the United States in the printing, publishing and paper fields, according to a survey recently completed by the Research Department of the Illinois Chamber of Commerce, listing the totals of all manufacturing industries in Illinois. The survey shows that 2,740 concerns are engaged in the printing, publishing and paper work. Although Illinois is not usually thought of as a producer of paper the survey lists thirty concerns in the state in this business. One hundred and ten paper box manufacturers are listed, while twelve firms are reported to be making wall paper. The total of printing, publishing, paper and related industries in Illinois ranks second in the entire state, a tribute to Illinois' rapid growth as the center of the printing and publishing industry. Special mention is made in the survey of the cornstalk plants, one of which, the Cornstalk Products Company, is now in operation at Danville. The survey lists 14,737 manufacturers within the confines of Illinois. The leader was food products, these manufacturers totaling 3,545 concerns. Following printing, publishing and paper in second place came textiles, machinery, forest products (furniture), iron and steel, metals, manufactured gas and chemicals, clay, leather, railroad repair shops, tobacco, transportation equipment, musical instruments, rubber and miscellaneous items. Over 2,010 of the concerns in the printing and publishing and paper producing are in Cook County, of which Chicago is the county seat.

News of the Trade

Some of the live wire printers in Chicago are sending out attractive direct mail pieces calling attention to the possibilities of advertising in stimulating business. One of these, the Walton & Spencer Company, has the following pasted on its attractive direct mail piece: "Roger Babson says: advertising can revive business quicker than anything else."

R. B. Harbison, Western sales manager of the International Paper Company with offices in the Conway Building, has recently returned from a satisfactory vacation trip in the South and on the Caribbean Sea. Mr. Harbison left Chicago on February 4 and returned on February 21. A Caribbean sea cruise took up about ten days of Mr. Harbison's time while the remainder of the vacation interval was spent in trying out the hills, greens and hollows of the golf courses that Biloxi is rapidly becoming famous for.

Another well known company has followed the lead of others in concentrating its sales efforts from the Conway Building at 111 West Washington street. The Milwaukee Lace Paper Company, of Milwaukee, Wis., has moved its Chicago sales offices from 115 South Dearborn street to Room 1664 in the building which is now generally recognized as headquarters for sales representatives.

Jim Coy reports that one of the important pieces of work transacted at the New York meeting of the Salesmen's Association, in addition to the very successful annual meeting, was the combining of the Miami Valley division of the Salesmen's Association of the Paper Industry with the Chicago division. This means, according to Mr. Coy, that the Miami division will be on the mailing list of the Chicago division for the important and interesting programs which are often times stirred up. A strong western division should therefore be assured.

Having established a big success with its Westvaco Inspirations for Printers we note that the West Virginia Pulp and Paper Company, 35 East Wacker drive, Chicago, is also running a beautiful series of advertisements entitled, "American History of Advertising." No. 2 of this series, in colors, depicts some stirring scenes of Colonial times, talks a bit about national independence and freedom and reproduces an advertisement of Revolutionary War days. It is an excellent method, say a number of Chicago printers we have talked to, of getting the Westvaco line over to the right people.

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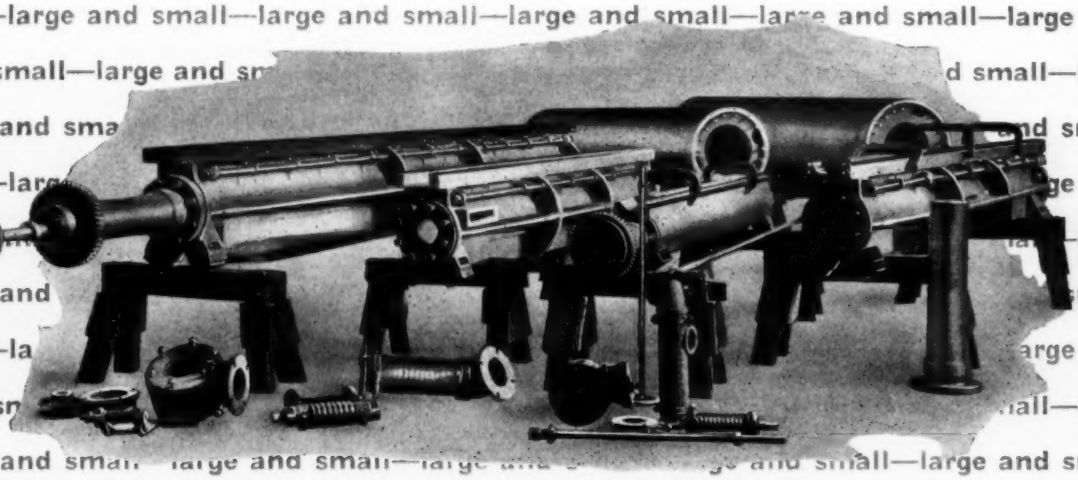


Downingtown (Kilberry Type) Suction Rolls are made in all sizes to meet your requirements. Rigidity of all rolls, regardless of diameter or width is assured by their properly proportioned shell of special composition bronze. This permits their standing up under pressures up to 180 pounds per linear inch, when installed at press. Write for information about our Adjustable and Non-Adjustable types.

▼ ▼ ▼

DOWNINGTOWN MFG. CO.
DOWNINGTOWN, PA., U. S. A.

Paper Demand Fairly Satisfactory in Boston

Both Fine and Coarse Paper Markets Show Signs of Improvement—Box Board Industry Exhibiting Irregular Trend—Prevailing Quotations Generally Conceded To Be Too Low—Paper Stock Market Quiet With Prices Unchanged—Waste Paper Offerings Ample

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 3, 1930.—The wholesale paper market has been from fair to good in this center the last week. With some, the last two weeks of February were better than the first two. A little more business generally in both fine and wrapping paper has developed. Business as a whole is expected to be back to normal by late spring, a condition which will undoubtedly result favorably for the paper industry.

Box board is somewhat spotty. Some of the mills are operating overtime, while others are not running to capacity. It is estimated that the board mills as a whole are operating 75 per cent capacity. There is no price cutting, although the trade generally feels, it is reported, that quotations should be higher.

The paper stock market is very quiet, with quotations unchanged. Waste paper is in plentiful supply. If anything, the price trend of both paper and rags is downward, although no drastic alteration in price levels has taken place during the week under review.

Storrs & Bement's New Line

The Storrs & Bement Company have become the sole New England agents for a new line of hand-made papers put out by the Thomas N. Fairbanks Company, Import Division of the United States Envelope Company, and made by Portals, Ltd., which has several mills in England, with the main office at London. This firm has made paper for the Bank of England for over two hundred years. The same line includes papers made by Rives in Isére, France, The House of Marais, France, and S. A. Cartiere Pietro Miliani, Fabriano, Italy. Many of the Italian papers are mould-made. All these papers mentioned are made to specifications given by Thomas N. Fairbanks. It is stated that this is the only line of hand-made papers in the country in large sizes of regular stock items. This is the only nationally distributed line of hand-made papers and is being put on the market now, with agents in all parts of the United States. From time to time new lines will be added from other countries. Storrs & Bement Company are to carry a good stock of all lines in Springfield, Mass. These papers are used primarily for limited editions of books specially designed brochures and mailing pieces to advertise the higher types of merchandise. All sizes and styles of envelopes are available on order from any one of these papers. Mr. Fairbanks and representatives of Italian paper mills are expected at the office of Storrs & Bement Company today.

Carter Rice Activities

Carter, Rice & Co. Corp., agents for papers manufactured by the Hammermill Paper Company, Erie, Pa., are distributing to printers two working kits, one of Hammermill Mimeograph and the other of Hammermill Ledger. Both portfolios contain extremely interesting specimens which demonstrate the adaptability of these grades for the purposes designated. An added feature of the portfolios is the fact that they have been scored for insertion in letter files. Carter, Rice & Co. Corp., distributors of Chieftain Bond, in the New England territory, are sending to the printing trade a very attractive folder, one of a series issued during the last year. Sales of Chieftain Bond, made by the Neenah Paper Company, Neenah, Wis., have shown 25 per cent increase in one year. The manufacturers feel that this splendid result is due not only to the efforts of their agents in introducing and selling this paper, but also to the satisfactory quality of the merchandise itself, because, it is stated, once sold, a repeat business is sure to result. At a regular sales meeting of Carter, Rice & Co. Corp., Charles H. Yocum, of Geo. W. Millar & Co., manufacturers of publicity wrapping paper, told of the possibilities of increasing sales of this line. He is to follow up this talk by accompanying the salesmen in their special calls on prospective customers. Carter, Rice & Co. Corp. are very enthusiastic about this line and feel that sales will be considerably augmented through this promotional work. On March 15, at one of a series of promotional sales meetings being conducted by Carter, Rice & Co. Corp., Lucius B. Folsom, president and treasurer of the Folsom Engraving Company, 470 Atlantic avenue, this city, is to describe briefly the photo-engraving process, noting which papers are best adapted to each process.

Massachusetts Envelope Co. Removes

The Massachusetts Envelope Company has removed from 110 High street to more commodious quarters at 641-643 Atlantic avenue, understood to be the largest quarters of any envelope company in Boston. The firm transacted more business on the opening day than in the last few months. Flowers were received from all over the country. This concern is one of the oldest envelope companies in Boston. Maxwell B. Grossman, president and treasurer, has been in the envelope business since he was thirteen years old. Jerome Grossman is vice president; William J. Travers, secretary, and William M. Wasson, clerk.

News of the Trade

The Baird & Bartlett Company have become distributors in the New England territory of Royal Satin box board, a nationally advertised product, made almost exclusively for the manufacture of high grade boxes.

Wallace Graves, sales promotion manager, of the New York office of the International Paper Company, gave a talk on Adirondak Bond at the office of John Carter & Co., Inc., Saturday morning. The new prices of this line have just gone into effect.

The Howard Paper Company and the Globe Paper Company have removed their offices from the eighth floor at 10 High street to larger quarters in Rooms 510 to 515 in the same building. The new quarters, which are completely equipped for the business, contain a sample room and private offices. The firms report a good demand for their lines and are beginning March optimistically with an increasing volume of orders.

As a part of their six months' campaign, the Tileston & Hollingsworth Company have issued a broadside advertising nine outstanding papers made by this company. They are: Milton Cover, Milton Text, Milton Direct Mail Pieces, Crinoline Cover, Crinoline Text, Crinoline Super Plate, Pointer S. C. and M. F., Athena Plate and Flemish Book. The broadside is printed on Blue Crinoline Text Wove Antique, one of the papers in the campaign.

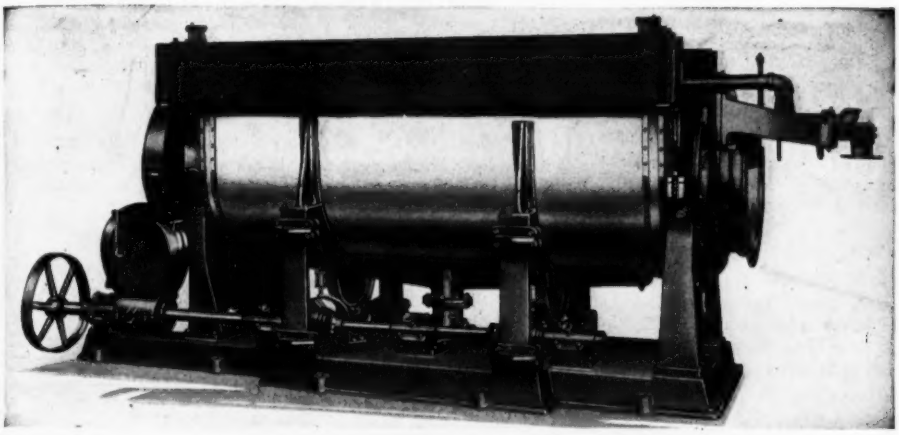
Layrite Tees, a product of the Sonoco Products Company, Hartsville, S. C., are being put on the market and have been received in Boston. The tees are cone-shaped and tubular and stand up firmly on the ground in any position.

Manager of Sales Smiddy, of the Missisquoi Pulp and Paper Company, Sheldon Springs, Vt., called on the trade last week.

In recognition of the craftsmanship and artistry in the making of the program for Art Week in Boston March 2-8 the Committee on Industrial and Civic Art of the Boston Chamber of Commerce gratefully acknowledges three concerns, including the S. D. Warren Company. The other concerns are printing and advertising companies.

BIRD MACHINERY

BIRD SCREENS



ARE ADAPTABLE

Bird Screens were chosen to handle two-thirds of all the paper made in North America because they do a better job on every kind of stock, under every set of operating conditions.

Let us show you how Bird Screens will do a better screening job, and do it with less actual expense, in your mill.

BIRD MACHINE COMPANY

SOUTH WALPOLE ◆ MASSACHUSETTS

3815

Ontario Paper Manufacturers Fairly Active

Book Paper, Ledger, Wrapping, and Fine Paper Mills Reported Practically Caught Up On Orders—Volume of Business Ahead Less Than In Corresponding Period Last Year—Coarse Paper Market Busy—Paper Board Industry Operating Below Capacity

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 3, 1930.—While the distributing end of the paper business in Ontario is, generally speaking, dull, a number of the houses say they are getting more orders out of town, throughout the province, than are being booked here in the city. It is admitted that it is difficult to get any volume of sales in any direction just now. Something approaching a slump has hit the paper trade as well as all lines of commercial activity in the province, due largely to the wheat situation in the West, the stagnated stock markets and the tightness of money generally. While wholesale paper merchants are experiencing a quiet time they are not lying down under it and are reaching out into avenues of paper consumption not hitherto thoroughly explored in an effort to secure orders that have not before been placed for the reason that there was little need to go after them. The consequence has been that while the general run of business has been decidedly dull the total sales from week to week have been augmented materially by hard digging in ground that used to be left to itself pretty much. The printing and lithographing trades are also dull and this is affecting somewhat the consumption of paper and the sales of the wholesalers.

As far as the manufacturing end of the paper industry is concerned there has not been any great let-up in operations although it must be stated that in most lines, such as book paper, ledgers, writings, and fine papers generally, the mills are pretty well caught up on their orders and there is not the same volume of business ahead that there was a year ago at this time. Notwithstanding this condition the fact remains that some of the fine paper mills have been booking some nice orders and on the face of things fine paper seems to be in a fairly prosperous condition. The coarse paper market is rather quiet and sales of wrapping have fallen off some since the first of the year, while the paper bag market cannot be said to be in a satisfactory condition. Kraft sales, both domestic and for export, are keeping up quite well and fairly good business is offering throughout the western provinces and in the east as well. Mills manufacturing glassine, grease proof and similar lines are only doing a moderate business and conditions in the coated paper line are showing some improvement. Manufacturers of tissues, toilets, and specialty lines, report business as quite good, these lines having suffered but little since the quiet period set in. The paper box industry is a good deal less active than it was at this time last year and the board mills are operating at considerably below capacity. All told it looks as if the first quarter of 1930 were going to show considerably reduced sales in most paper lines, although it is conceded that the industry will be about the first to respond to improved business conditions generally throughout the province, are looked for soon.

Pulpwood Harvest on the Gaspe Coast

Charles H. Nadeau, of Port Daniel East, says that the cutting of pulpwood in that portion of the province known as the Gaspe Coast, has been quite extensive during the present season. From Carlton down to Gaspe practically no long lumber is being cut outside of that turned out by a few local mills and the product of these is used locally. Attention is being directed more and more to pulpwood. At Bonaventure, the Cascapedia Manufacturing and Grading Company are cutting about 35,000 cords of pulpwood, this wood to be rafted over to Bathurst for the Bathurst Power and Paper pulp mill. At Chandler, the Bonaventure Pulp and Paper Company are taking out about 40,000 cords for their pulpwood. At Gaspe some 60,000 cords of pulpwood are being taken out between the Howard Smith Paper Mills and the International Paper Company. Some 40,000 cords of pulpwood will be harvested along the railway which now forms part of the Canadian National Railway system. About three-quarters of this is being bought by the Bonaventure Pulp and Paper Company for delivery at Chandler to be manufactured into pulp. The rest of the wood will be shipped out by water during the summer. Conditions have been very favorable for woods work this winter and the weather has been exceptionally fine, with not a very large amount of snow.

Thaw Threatens Pulpwood Movement

If the mild weather continues, the pulpwood operators and lumbermen of Algoma, Ont., will face very unfavorable conditions for the spring haul. In many of the camps the logs have not yet been deposited on the banks of rivers and lakes in anticipation of the spring drives. The Abitibi Power and Paper Company will not be very hard hit in any case. The haul of the paper company is almost finished and the amount of wood left in the bush will be small. The Carpenter-Hixon Company is pretty well through, too, it is reported. It is announced at the Northern Development Branch office that the only road in Algoma functioning today is that part of the Carpenter-Hixon road running from Iron Bridge to Blind River. All other roads are deep in water and slush. Reports from up the Algoma Central Railway say that there is still a lot of wood in the bush to be moved yet. Among the pulp companies and operators up the line are the Newago Company at Hale, and north of that point; Northern Paper Mills, between Capel and Hearst; C. W. Millburn, Hearst; C. Brishon, and the Searchmont Lumber Company. The weather is not so mild above Franz, it is reported, and the thaw has not done so much damage to bush roads there, as it has in the Algoma area. There is much snow in the bush and a continuance of mild weather will bring one of the heaviest floods in recent years, bush operators are quoted as saying.

Pulp in Manitoba Must Be Retained

Word from Winnipeg this week is to the effect that Manitoba will manufacture all the pulpwood cut within the province if an amendment which has just passed the Law Amendment Committee of the Manitoba Legislature is approved by the House. The new bill provides that all timber cut under the authority of a pulpwood license shall be manufactured in Manitoba. Manufacture of Manitoba pulpwood was restricted to any port of Canada in the original timber and forest reserves bill. Representatives of the province's pulp and paper industry, in attendance at the Law Amendments Committee meeting in Winnipeg expressed accord with the proposal to restrict manufacture to Manitoba. "We welcome such a provision," Bruce Thompson, of the Manitoba Pulp and Paper Company declared. Failure of firms to observe the new section will result in suspension of license.

Forest Fire Legislation Introduced

Efforts to further check the tremendous losses from forest fires in Northern Ontario will be made by a bill introduced in the Ontario Legislature this week by the Hon. William Finlayson, Minister of Lands and Forests. In introducing the bill Mr. Finlayson stated that last year there were 1,508 fires in the province, which was a new record for all time. While there were more fires the total acres burnt, 588,450, was considerably less than the losses

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May we quote you on

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of 1923. Last year 98,785 acres of timber land were burnt. He states that the expenditures for fire ranging and the fire tax last year were $1,674,013. The fire tax was $353,258. The new bill consolidates old acts, extends the close season for setting out fire from September 30 to October 15, gives municipalities more responsibility, insists on woodsmen's and forest travelers' permits.

Pulpwood Taxation Asked At Ottawa

Canadian exports of pulpwood to the United States, which amount to some $20,000,000 annually, may cease if Parliament adopts the policy advocated by George Parent, Liberal member for Quebec West. Mr. Parent suggests that the time has come for Canada to impose an embargo or exportation duty on pulpwood, coupled with such legislation, if necessary, as would assure settlers a fair remuneration for wood taken from their lands. The idea behind the proposal is that the pulpwood now being exported from Canada as raw material and converted into news print in the United States would be manufactured into news print in this country if an export embargo were imposed. It is conceivable that the news print situation and news print prices in Canada might be affected if Parliament saw fit to adopt the Parent proposal. Much of the pulpwood exports is said to be from freehold lands, and it is claimed that thousands of settlers in Northern Ontario and Northern Quebec and farmers in the Maritime Provinces are able to realize ready cash by reason of the American demand for Canadian pulpwood. The Governments of Quebec and Ontario do not permit the exportation of pulpwood cut on Crown lands, it is stated. The Canadian Pulpwood Association, which includes thousands of small operators and settlers, is actively opposing any embargo, claiming the United States would obtain supplies from Russia and Sweden if Canadian pulpwood were not available. They further claim an embargo would have the effect of restricting the market for settlers' pulpwood and might depress prices offered to the settler.

Notes and Jottings of the Trade

J. E. Patterson, manager of operations for the Abitibi Power and Paper Company, stated a few days ago that the machines at the Thunder Bay branch at Port Arthur would likely resume operation on March 1 with about 70 per cent continued production. While no announcement can be definitely made he said January and February were always slack months with the mills and had been so for the past ten years. There is always, he added, a slump after Christmas and the wants for the spring and summer months are not yet made up.

Capt. W. E. Parnell, manager of Le Havre Pulp Company, Ltd., New Germany, N. S., has commenced shipping ground pulpwood to Lunenburg, Conn. More than 200 car loads of pulpwood were moved into Brooklyn, N. S., during the last few days, the Mersey Paper Company unloading an average of forty a day. The recent weeks of steady winter weather with good sleighing have proved a boon to the pulpwood owners.

United Paper Mills, Ltd., Toronto, Hamilton and London, have been appointed Canadian agents for Capri Coated Tint, manufactured by Hampden Glazed Paper and Card Company, Holyoke, Mass., and created to give a new vivid setting for the finished halftone illustration and copy.

L. R. Wilson, vice president and general manager of the Abitibi Power and Paper Company, and Brigadier-General J. B. White, D.S.O., vice-president of the International Paper Company, are spending a couple of weeks at Pinehurst, N. C.

The annual meeting of the Interlake Tissue Mills, Ltd., was held at the head office of the company in Toronto a few days ago when the reports submitted indicated a satisfactory year's operations up to the end of December 31, which is the end of the organization's fiscal year.

The C. V. Syrett Paper Company, Toronto, have been appointed Ontario agents for the paper mulch product being turned out by the Canada Paper Company, Ltd.

The Howard Smith Paper Mills have just announced a new paper, "Statesman Script," for high class business correspondence and blanks which seems well adapted for those purposes. It recalls old English business stationery, suggesting dignity, beauty and utility. It is a laid paper, of a brilliant blue-white, and is especially well adapted to the vagaries of the typewriter.

In the prosecution, with $100 and costs penalty, imposed upon the Newago Timber Company of Port Arthur, for carrying their employees to their camps on the north shore of Lake Superior in their own tug, a ruling which is of great interest to pulpwood operators and lumbermen has been given. A Fort William lumberman was also penalized under another section of the Transportation Act last year for conveying his own men in his own truck over a highway on which a taxi company had a transportation charter. The charge against the Newago company was laid by the Department of Marine and Fisheries.

H. L. Sanborn, of the Abitibi Power and Paper Company, Ltd., and his family, have taken up their home at 200 St. Clair avenue West, Toronto.

There is gratifying evidence that the higher grades of tag now being manufactured by Alliance Paper Mills, Ltd., at its Lincoln Division, on the machine that was remodeled and turned over last September, are being well received by the trade. One line, in particular, has practically replaced importations of products of similar grade from outside. The improvements recently made to the Lybster machine at its Merritton mills, which specializes in fine papers and light weights, have also resulted in a highly satisfactory increase in production and in a corresponding improvement in the quality of all lines.

The Dominion Engineering Company has secured the contract for the new news print machine to be installed by the Powell River Company, Vancouver, B. C. It is understood that the machine will be 234 inches in width. The same company has also secured the contract for the additional power machinery to be added at Powell River. An unofficial report states that the Dominion Engineering Company have also received the order for the Mersey Paper Company third machine at Brooklyn, N. S.

Brown Corp's Expansion

The Brown Corporation's plant at La Tuque, Que., is being enlarged by the installation of an evaporating plant. A new type of smelting furnace also has been started for the purpose of recovering chemicals used in the manufacture of special products.

The recovery of these chemicals and of the heat contained therein has been a problem for the past fifteen years and its successful solution is pleasing to the management. The erection of other furnaces of a like design will follow, both at La Tuque and at the company's plant at Berlin, N. H.

At La Tuque, the company's plant has a capacity of 500,000 tons of sulphate pulp per day, and other products are also manufactured.

Westminster Paper Plant

The first unit of the new paper plant of the Westminster Paper Mills at Westminster, B. C., will be brought into operation in April. It will manufacture high grade tissue paper. The second unit will then be proceeded with, and will manufacture book and writing paper.

The firm is installing a combination paper machine of about twice the size of the old Yankee type of machine which was discarded. This machine will manufacture paper from the lightest tissue to the heaviest type wrapping paper.

Lawson Ramage Goes To Brownville

Lawson Ramage, for the past two years superintendent of the Missisquoi Pulp and Paper Company, at Sheldon Springs, Vt., has accepted a position with the Brownville Board Company, Brownville, N. Y., and will assume his new duties about March 1st.

"The cleanest Bond and Ledger Papers yet manufactured"

announces one user of
TOLHURST
CENTRIFUGALS

Here is his message to the trade:

"This company has now installed a process that enables us to make the cleanest bond and ledger papers yet manufactured—papers more nearly free from dirt and specks than any others you have ever seen."

DESIGNED AND BUILT BY CENTRIFUGAL SPECIALISTS

A number of mills are now cashing in on this powerful selling argument which results from the use of TOLHURST CENTRIFUGALS.

Send in the coupon and we will furnish you with samples of paper which has passed through the TOLHURST CENTRIFUGAL so that you can see for yourself how much cleaner, better textured and stronger it is.

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New York Office: 30 Church Street — *Chicago Office:* 8 So. Dearborn Street

TOLHURST MACHINE WORKS, Inc.
653 S. Fulton St., Troy, New York

Gentlemen:

Please send me your new Bulletin on the Tolhurst Centrifugal and a list of the mills who are now using it to make *clean* paper.

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Mill ..... Address .....

3781

Philadelphia Paper Market Shows Steady Trend

Manufacturers and Distributors of Paper Co-Operating In Effort to Stabilize Prices, Despite Keen Competition Which Continues to Prevail—Many Grades of Book Paper Are In Excellent Request—Some Overlapping of Cheap Writing Paper Grades Noticed

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 3, 1930.—Inspiration for bigger and better paper business was an outgrowth of the National Paper Trade Convention held in New York recently and those members of the Philadelphia trade who journeyed to the Metropolis to join in the annual gathering have returned home with renewed vigor after hearing of the many factors that the organization is prepared to turn to the welfare of its members and the trade as a whole, while adjustment is being effected in industry generally. That the paper industry will be in line for improvement is assured by the present steady tone of the paper market despite lessened activity. There has been no remarkable price reductions and while competition is keen, distributors are well united in efforts to keep business stabilized rather than to permit vaues to reach a demoralizing level. Manufacturers, too, are co-operating in this effort at price stabilization and no disastrous offerings are now made from the mills, as has been a custom in times of dullness in the past.

With restricted markets, there is an inclination to cut down the number of products of similar make and distributors are not stocking heavily, carrying only such supplies as are most active. This is particularly true of the fine paper market, where much overlapping is noted and where so numerous marks are stocked that extra cost is entailed in overhead for carrying any appreciable quantities. There are many grades of book paper in the unfinished stocks and the market for these is unlimited. However, as the larger consumers of these book papers patronize the wholesale merchants and mill representatives they are not stocked as heavily by the distributors generally. It is chiefly in writing papers of the cheaper class that this overlapping is noted.

Wrapping paper merchants are also looking ahead to stabilization of business. There has been vigorous efforts exerted by the salesmen to stimulate buying. Some of the larger paper houses that have been buyers of kraft at the higher prices of the year are having no difficulty in disposing of their stocks in competition with the lower prices offered by paper distributors who were purchasers at the lower levels. These houses are of broad reputation and long established and have their own following built up over a long period by patrons whose confidence in the dealers is so firmly set that prices do not enter materially into orders obtained.

Washington's Natal Day Celebrated

With over one hundred members of the Paper and Cordage Merchants Association and their associates joining in the First Annual Dinner Dance of the organization held on Washington's Birthday at the Pennsylvania Hotel, 39th and Chestnut streets, there was enjoyed one of the most delightful occasions in the history of the association. In the colorfulness of patriotic decorations, harmonizing with floral tributes to the fair sex in corsage bouquets presented by the association, and in the adornments of the tables, there was enjoyed a banquet of seasonable good things, followed by a dance and bridge party where prize awards were made to the lucky winners of trophies for dancing and card games. The members were the guests of Joseph Waldman, Jr., of the Edwin H. Fitler Company, 518 Arch street, manufacturers of twines, and his daughter, Leah Waldman, who was the winner of the elimination dance award. J. H. Birle, Jr., of the American Forest Products Company, captured the door prize, while the high bridge score trophy went to William C. Mansfield, of the Union Bag and Paper Corporation, Philadelphia branch, and the low score to Robert Reed, of the Quaker City Paper Company. The entertainment was arranged under the direction of the chairman of the committee, J. H. Birle, Jr. Preceding the frolic at the Pennsylvania Hotel there was a monthly meeting held at the Adelphia Hotel when plans for the dinner dance were perfected, and the members heard John E. Norwell, of the Credit Interchange Bureau of the National Association of Credit Men, talk on "Retail Credit." President George K. Hooper, of the Hooper Paper and Twine Company, presided.

Paper Association To Hear of Convention

Reports of the National Paper Trade Convention will be made to the local members of the Philadelphia Paper Trade Association at the coming meetings to be held in March. There will be presented in detail the activities of the National body by the Delegates, N. A. Considine, for the fine paper, and Charles A. Wilder, for the wrapping paper division.

American Bag & Paper Makes New Coal Sack

A new coal sack has been presented to the trade by the American Bag and Paper Company, with plant at Water and South streets. The new coal sack is of the duplex type with strong interlining that is specially treated to produce a durable and extra strength in product. It is of kraft and is printed in one or two colors. The firm is equipped to produce glassine bags of all sizes and grades and has its own line of shopping bags, developed by the head of the Company, Samuel Kardon.

Container Corp. of America To Improve Power

Plans for further development of its power plant are now under consideration in the local offices of the Container Corporation of America. There will be added to the power plant at the mills in the Manayunk district along the Schuylkill River a larger turbine which will materially increase its supply to the mills and the container plants. Improvements to the power plant will involve an expenditure of more than $100,000.

Champion Container Co. Improvements

Having added materially to its plant equipment, the Champion Container Company, Inc., Water and Morris streets, has extended its production of spiral and parallel paper tubes. The firm has installed additional spiral winders for production of the type produced by the M. D. Knowlton Company, of Rochester, N. Y. The firm is also extending its line of fiber shipping containers and drums for bulk products, such as ground coffee, powders of various kinds, etc.

Vesey Clark Recovers

Having recuperated from a recent operation for appendicitis, Vesey Clark, manager of the Philadelphia offices of the DuPont Cellophane Company, Inc., located in the Liberty Title and Trust Company Building, Broad and Arch streets is again at his desk, and making the rounds of the trade. He was operated on at the Hahnemann Hospital, February 1, and has been recuperating at the shore.

Federal Container Co. Occupied New Plant

Having completed the construction and installation of the plant units in its new addition on the site of the former buildings occupied by the Federal Container Company, the new quarters are now in operation and producing the products in which

National Dyes and National Service

SUPPLEMENTING the wide range of National Dyes available for paper coloring is the highly specialized service that we render to the paper industry.

Adequately equipped paper laboratories to work out your color problems, and ample warehouse stocks in each of our branch offices to insure prompt deliveries, are part of the service we offer you.

We are always glad to cooperate with you in solving your color problems.

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Philadelphia **San Francisco** **Providence**
Toronto

the concern specializes. These include fiber containers for various purposes. The new quarters were added under the lately acquired ownership of the Fibreboard Products, Inc., of San Francisco, Cal., a subsidiary of the Crown Zellerbach Corporation, which opened an Eastern branch factory at 56th street and Paschall avenue. after taking over the assets of that company. The new quarters will be devoted to the corrugated department. There has been installed new Langston corrugating machines made by the Samuel M. Langston Company, Camden, N. J. The new quarters enable the firm to double capacity and will give adequate warehousing space. The plant remains under T. C. Mitchell, who was one of the founders of the Federal Container Company. At the time of the acquisition of the Philadelphia concern it was announced by the Fibreboard Products, Inc., through its president, that there would be added to the Philadelphia plant a paper mill which would produce the materials used in the manufacture of the corrugated products and the containers but so far plans have not materialized.

Thomas M. Royal & Co. Active

Owing to the tremendous demand for cellophane bags Thomas M. Royal & Company is keeping its plant operating on a 24-hour schedule. The firm is one of the largest bag manufacturers in this section and occupies a mammoth structure erected for its own use at 7th and Grange streets. It is turning out several hundred thousand bags per day in an effort to meet the growing demand. There is also a good demand for the Royal bags of standard makes and bags used for the shipment of bulk products under rulings of the Inter-State Commerce Commission which obligates the shipper to use a non-sifting bag product. These bags have been perfected by the Royal Company to meet the needs of the consumers and the railroads.

Moyer & Son In Paper Stock Business

Having acquired the paper stock business formerly owned by William A. Coll, trading as the W. A. Coll Company, at 873 North 9th street, Moyer & Son are now in possession of the premises and warehouses at this address. The head of the firm is Samuel Moyer, and associated with him in the paper stock business is his son, John Moyer.

John J. Costello In New Location

John J. Costello, who recently occupied an office and warehouse at 48 North Front street, where he conducted a paper stock and rag brokerage business, has located in larger quarters at 224 Chestnut street. He will continue wholesaling these commodities but under greater stocking facilities. He was formerly engaged as manager of the Penn Paper and Stack Company, but for the past two years has been in business on his own account.

Fire Destroys Paper Stock Warehouse

One of the most spectacular fires in recent years resulted in the destruction of the building of H. Feldman & Company, at 326 South Delaware avenue, dealers in rags, burlaps, and paper stock. The building is located in a congested neighborhood. It took all the central city fire brigades to conquer the fire along the Delaware River. The four story building was entirely gutted, as the bales of rags burned furiously. The Feldham Company is one of the largest of wholesale rag merchants in the city established for many years.

Distinguished Visitor Welcomed

Trade associates welcomed a distinguished visitor and relative of the members of the Lindsay Paper Company, 806 Sansom street, last week, in the return to Wilmington and Philadelphia the Duchess of Croyden, a neice of David Lindsay, Jr., and J. Horace Lindsay, brother associates of the old established fine paper house. The Duchess of Croyden is the former Helen Lewis, daughter of Mrs. Jennie Lindsay Lewis, of Wilmington, Del.

Hoberg Paper Co. Has Good Outlook

Confidence in the favorable outlook for the paper industry was expressed in the reports submitted to stockholders of the Hoberg Paper and Fibre Company, Green Bay, Wis., at their annual meeting last week. An official announcement given out at that time was as follows:

"We are entering upon the present year with confidence in the existence of a generally sound economic condition, and with reasonable prudence there ought not to occur any development which, for any considerable period, would interrupt the trend of progress. It must be borne in mind, however, that with the rapidly changing methods of merchandising and manufacturing, both opportunities and responsibilities appear on the 1930 horizon on a larger scale than at any time in our business history.

"Underlying business conditions are sound, and the general feeling since the break in the stock market seems to be improved, but the actual evidence of business recovery seems to be, to a certain degree, spotted. We see no reason why there should not be a fairly satisfactory volume of business in 1930. In making this statement, however, we are mindful of the sensitiveness of business and the highly competitive conditions prevailing."

Officers of the company were re-elected, including: J. M. Conway, president; Thomas J. Dee, vice president; F. T. Ramsay, secretary and treasurer; E. A. Clancy, assistant secretary and assistant treasurer. Other members of the board of directors are: Dr. J. R. Minahan and William Hoberg, Green Bay; W. Y. C. Hunt, Chicago, and Dr. C. E. Albright and J. A. Auchter, Milwaukee.

Lily-Tulip Cup Has Good Year

The report of Lily-Tulip Cup Corporation for the year ended December 31, 1929, shows net profit of $624,404 after charges and federal taxes, equivalent after 7 per cent preferred dividend requirements, to $3.31 a share on 183,000 no-par shares of common stock.

Balance sheet as of December 31, 1929, shows total assets of $2 558,715 and surplus of $924,350. Current assets amounted to $1,588,318 and current liabilities $341,365.

In his remarks to stockholders, Henry Nias, president, stated that there is every evidence of a substantial growth in the company's sales, due to the large variety of its products and the many avenues for their use; and it is his opinion that activities for the ensuing year will be productive of a larger and more profitable business. New manufacturing machinery has been installed and more is in the course of construction, which will increase the production sufficiently to amply supply anticipated requirements.

Sell Van De Carr Paper

The Gibbs-Brower Company, Inc., has sold for E. H. Angier, president of the Angier Corporation of Framingham, Mass., his paper mill at Stockport Center, N. Y., formerly known as the Van de Carr Paper Company. This is a little mill on the Claverack Creek, comprising some 30 acres of land, mill buildings, storage house, boiler house, finishing room, tenements, etc. The mill is fully equipped with two cylinder paper machines of a medium width.

The new owner is a New York man, who is taking the mill over to manufacture his own product, but at the present moment he is not ready to have his plans made known.

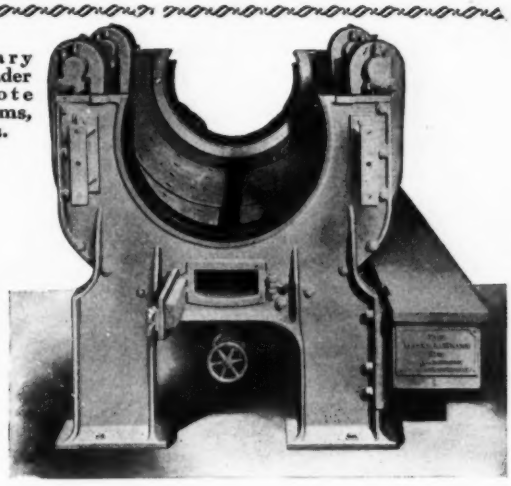
L. A. Fainlight in New Field

Leslie A. Fainlight, formerly with the Kelsey-Risden Company, Inc., New York, has become a partner in the Joel-Murray Company, Inc., of 251 West 19 street, New York, specialists in advertising and sales promotion. Mr. Fainlight will devote his future activities to contacting the paper trade, offering sales and advertising counsel.

"M & W" Rotary Screen

with important new features

View of Rotary Screen with cylinder removed. Note divided diaphragms, large openings.



Divided Diaphragms. Each diaphragm is divided into two sections, which move in opposite directions. The resulting balanced movement avoids all side strain on the cylinder, requires less power, and increases the screening capacity.

Discharge Openings at both ends of cylinder are much larger.

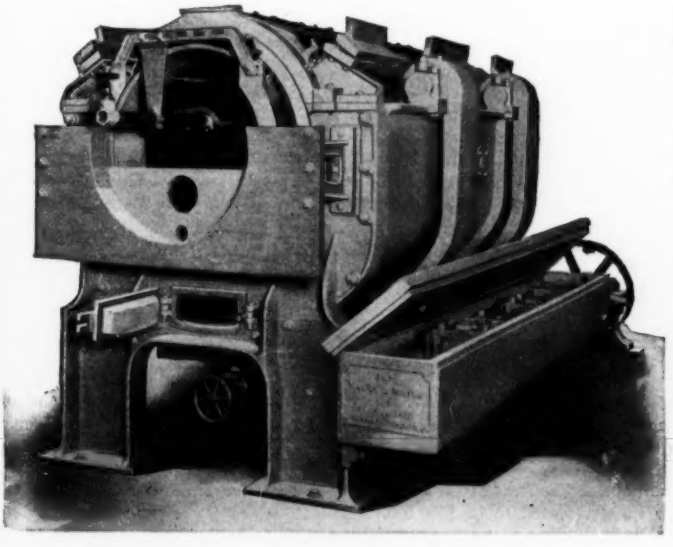
The "M & W" Rotary Screen now being placed on the market has been redesigned and built from practical paper mill experience. Recent improvements are fully covered by United States and Foreign Patents.

No Dead Stock in Cylinder. Improved discharge of stock from both ends of cylinder to flow box.

No Dead Stock in Vat. Pockets are prevented by diaphragm action and automatic flushing outlet.

No Packing Troubles. It is impossible for lumps *to get into screened stock.*

Note enclosed and accessible main drive, showerpipe, washout door for cleaning.



Self-Oiling Bearings. Shaft bearings and eccentrics are self-oiling, enclosed and protected from water.

New Shower Pipe—the Moore & White "Criss Cross" pipe that clears the screen plates so effectively.

Increased Capacity — Less Power — Reliable Operation at Low Cost

THE MOORE & WHITE CO.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

WRITE FOR NEW SCREEN BOOKLET

New York Trade Jottings

The Ainslie Paper Stock Company, of Brooklyn, N. Y., has been incorporated to deal in rags and paper stock.

* * *

The Hercules Powder Company reports for the year ended on December 31 net profit of $4,358,904 after charges, equal after preferred dividend to $5.95 on 598,000 common shares, against $4,038,980, or $5.51 a share in 1928.

* * *

The regular weekly luncheon and meeting of the New York Division of the Salesmen's Association of the Paper Industry was held at the Fraternities Club last Monday. While the occasion was informal, matters of interest to the members were freely discussed.

* * *

Corn Products Refining Company reports for the year 1929 net income of $16,309,651 after charges and taxes, equal after preferred dividends to $5.75 a share on the $25 par stock, of which there are 2,530,000 outstanding. That profit, compared with $13,192,974 or $4.52 a share in 1928.

* * *

Atterbury Bros., Inc., have absorbed the firm of Atterbury & McKelvey, wood pulp importers, of 11 Broadway, New York. The new organization is agent for A. S. Tofte Cellulose Fabrik, of Oslo, Norway. The headquarters of Atterbury Bros. are located at 110 East 42nd street, New York.

* * *

Mathieson Alkali Works, Inc., reports for the year 1929 a net income of $2,324,276, after depreciation, depletion and Federal taxes, equivalent after dividend requirements on the 7 per cent preferred stock to $3.31 a share on 650,436 no-par common shares. This compares with $2,091,402, or $13.04 a share on 147,082 common shares, in 1928. The 1929 net income was the largest in the company's history. The company's 1929 surplus was $1,016,008, while the balance sheet shows an accumulated surplus of $7,515,128 and assets of $21,533,626.

* * *

Sustaining protests of Koons, Wilson & Co., Philadelphia; Castle & Overton, Inc., the National Association of Waste Material Dealers, E. J. Keller & Co., Inc., and the Judson Freight Forwarding Company of New York, the United States Customs Court finds that certain shipments of old rags, subjected to duty upon entry at the rate of 10 per cent ad valorem under Paragraph 1457, Tariff Act of 1922, as waste not specially provided for, should have been permitted free entry under Paragraph 1651. Justice Cline writes the opinions in these cases. In other decisions also covering shipments of old rags, protests of the Atlas Textile & Supply Company, Inc., Los Angeles; G. W. Sheldon & Co., of New York, and Samuel Dry of Chicago, are overruled because, as stated by the court, "the plaintiffs have failed to sustain their burden of proof."

Rutter & McNaught, Inc., Add New Lines

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 3, 1930.—The Collins Manufacturing Company, Holyoke, Mass., has appointed Rutter & McNaught, Inc., agents for Active Bond in conjunction with John Carter & Co., Inc. The price has been reduced from 24 cents in ream lots to 21¼ cents and in cases from 21¼ cents to 19½ cents. New colors are to be added to this line which has a 50 per cent rag content.

The Chemical Paper Manufacturing Company has appointed Rutter & McNaught, Inc., agents for Sheerleaf Onionskin, a grade between Bantam and Myriad Onionskin. The same company has added Nippon Vellum, a new line, to its products. This paper in white and India deckle-edged, made in both plate and antique finishes, is stocked in Boston.

Abitibi Earnings Higher

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 4, 1930.—The annual report of the Abitibi Power and Paper Company for the year ending December 31 came as a pleasant surprise to shareholders, for it reveals a substantial increase in profits and a further improvement in an already strong balance sheet position, all achieved in the face of adverse conditions which surrounded the news print industry during the past year.

Earnings for the year under review were equal to $1.97 per share on the company's common stock outstanding, as compared with $1.33 per share in the preceding year. Net working capital is shown at $13,071,726 at the end of 1929, as against $12,097,188 at the end of the preceding year, an increase of nearly a million dollars. A feature of the balance sheet is the reduction of bank loans from $5,000,000 to $1,750,000 in the current statement.

Alexander Smith, the president, strikes a hopeful note, for he says, "Conditions in the news print industry are still adversely affected through overproduction, but the prevailing low prices are already having their inevitable effect of limiting the creation of new units and with the return of normal business conditions in its great market, the United States, there is no reason to doubt that this fundamental industry will again reach a position of reasonable prosperity, commensurate with its importance."

Paper Merger Near Completion

MONTREAL, Que., March 4, 1930.—The proposed merger between the St. Lawrence Paper Mills Company, Ltd., the Brompton Pulp and Paper Company, Ltd., and the Lake St. John Power and Paper Company, Ltd., has been virtually completed, according to the papers here, although in official sources it is stated that there are still a number of details to be arranged before an announcement will be in order. It is generally expected that the St. Lawrence will form the nucleus of the new company, which will have a capacity of approximately 1,000 tons of news print per day, and that Ernest Rossiter, the president and general manager of the St. Lawrence, will head the new organization.

The St. Lawrence mills are situated at Three Rivers, Que., and have a capacity per day of 900,000 lbs. of news print, 750,000 lbs. of ground wood, and 220,000 lbs. of sulphite pulp. The Brompton mills are situated at Bromptonville, Que., and have a capacity of 240,000 lbs. of news print and 280,000 lbs. of ground wood. The Lake St. John mills are situated at Dolbeau, Que., and have a capacity of 480,000 lbs. of news print, 360,000 lbs. of ground wood, and 120,000 lbs. of sulphite fiber.

American Writing Increases Dividend

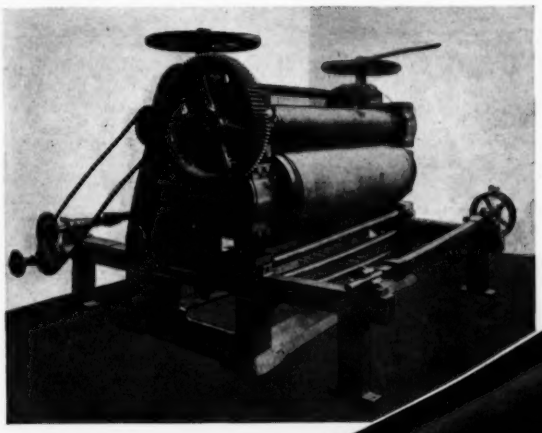
[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., March 4, 1930.—The increase of dividends on the preferred stock of the American Writing Paper Company, Inc., to $1 a share the past week is considered here as proof of the admirable handling of the company by President Sidney L. Willson.

Plans are being made to have the 152 inch machine at the George C. Gill Division, which has been sold to a southern mill, dismantled and shipped. The "giant" will be replaced by another and smaller machine and later if business warrants it by a second machine. It is hoped to have the new and smaller machine in operation this year.

Prohibition Ballots Made in Holyoke

HOLYOKE, Mass., March 4, 1930.—There is no little Holyoke pride in the fact that the ballot cards on the national poll for prohibition being carried on by the *Literary Digest* were made at the Chemical Paper Manufacturing Company of this city. Five different colors were made by special process to prevent counterfeiting the cards. Each of 20,000,000 persons will receive ballots. The cost is estimated to be $600,000.



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Paper Converting Machinery

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Niagara Falls, N. Y.—The Kimberly-Clark Corporation, Neenah, Wis., has plans nearing completion for the construction of a new addition to its branch mill on Packard road, near Pine avenue, Niagara Falls, and for which bids will be asked at an early date. The new unit will be used for increased output and will be five-story, 80x200 feet. It is estimated to cost close to $200,000, including machinery.

Menasha, Wis.—The John Strange Paper Company, Washington street, has preliminary plans under way for extensions and improvements in local mill, including primarily the remodeling of an existing boiler house for a new machine shop and pulp storage unit. It is understood that work will be placed in progress at an early date. Estimated cost has not been announced.

Philadelphia, Pa.—The Philip Carey Manufacturing Company, Lockland, Cincinnati, Ohio, is said to be arranging early preparation of plans for a proposed new plant on tract of land recently acquired at Philadelphia, comprising about 7 acres located at 58th street and the Schuylkill River, with water frontage of about 300 feet along that stream. The project will consist of several buildings reported to cost upward of $300,000, with equipment, plant to be devoted to the production of mill board, roofing papers and other regular products of company. W. J. Moeller is general manager.

Schenectady, N. Y.—The Superior Printing and Box Company, 110-120 South Church street, manufacturer of paper boxes and containers, is considering the early rebuilding of portion of plant, destroyed by fire, February 23, with loss reported at close to $30,000, including equipment.

Cleveland, Ohio—The Continental-Diamond Fibre Company, 1160 West Third street, Cleveland, with headquarters at Newark, Del., is reported planning an addition to local mill for increased output. It is proposed to select an architect at an early date, when details and estimates of cost will be determined. A. J. Schmitt is local manager.

Chattanooga, Tenn.—In connection with proposed expansion and betterment program, recently noted in these columns, the Tennessee Paper Mills, Inc., will make extensions and improvements in steam power plant at the mill, and it is understood that the larger part of work will be devoted to that department. Additional equipment will be installed for increased output. A. M. Sheperd is vice-president and general manager.

Kalama, Wash.—W. P. Hawley, Oregon City, Ore., and associates are reported to be planning the construction and operation of a new sulphate pulp mill at Kalama, where negotiations have been in progress for several weeks with local business interests for establishment of such a plant. As now projected, initial units will have a rated capacity of 100 tons of pulp a day, and are reported to cost more than $1,000,000, including property and machinery.

Priest River, Idaho—The Pacific States Pulp and Paper Company, Hutton Building, Spokane, Wash., is said to have plans maturing for early construction of superstructure of proposed new sulphate pulp mill at Priest River, where site was selected a number of months ago. The plant will have a capacity of about 100 tons daily, and is reported to represent an investment of close to $1,200,000. A. T. Petersen is vice-president, in charge.

Bridgeport, Conn.—The Bridgeport Paper Box Company, Bridgeport, has approved plans for immediate erection of a new addition to plant on Kossuth street, to be one-story, 40x90 feet, reported to cost more than $20,000, with equipment. General contract has been let to the Edward E. Bray Company, 362 River street, Bridgeport.

San Francisco, Cal.—The Crown Zellerbach Corporation, 534 Battery street, is disposing of a bond issue of $10,000,000, a portion of fund to be used for general financing and expansion, including acquisition of additional properties to add to existing group of pulp and paper mills in different parts of the country. A subsidiary organization, the Crown Willamette Paper Company, is carrying out an expansion and development program at mill at Camas, Wash., with installation of additional equipment for large increase in former output, including pulp manufacturing department, reported to cost over $2,000,000. Parent company has also started operation of a new mill for its West End Paper Company at Carthage, N. Y., where work has been in progress for a number of months past on remodeling and equipping an existing mill; this plant will be given over to tissue manufacture. Louis Bloch is chairman of the board of directors.

Los Angeles, Cal.—The Pioneer Paper Company, 5500 South Alameda street, is having plans prepared for the erection of a new addition to its plant, to be two and three-story, 50x100 feet, equipped primarily as an emulsion unit. It is reported to cost close to $50,000, with machinery. It is understood that bids will be asked on general contract at an early date. Hamm, Grant & Brunner, Inc., Ferguson Building, Los Angeles, is architect and engineer, in charge.

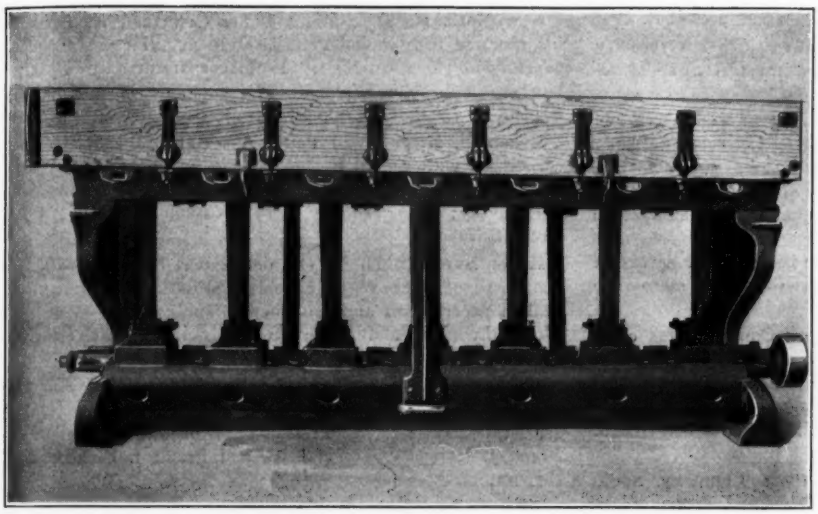
Chicago, Ill.—The Container Corporation of America, Inc., 111 West Washington street manufacturers of paper boxes, cartons and containers, has concluded arrangements for an increase in capital from 600,000 to 2,000,000 shares of stock, no par value, portion of fund to be used for general financing and expansion.

Watertown, N. Y.—Fire, February 25, damaged a portion of the local mill of the Hinde & Dauch Paper Company, on Sewall's Island. An official estimate of loss has not been announced. The damage will be replaced. Headquarters are at Sandusky, Ohio.

Lockport, N. Y.—The Lock Fold Paper Box Corporation has been organized with a capital of 700 shares of stock, no par value, to take over and expand company with local plant, known as the Lock Fold Paper Box Company, with headquarters in the Lohrmann Building. Heads of the new company include F. Howard Lerch, Charles P. Wallace and Roy J. Chase.

Somerville, Mass.—The Agar Manufacturing Corporation, Somerville, manufacturer of corrugated boxes and papers, has approved plans for a new addition to local plant at Warwick Place

A REPUTATION EARNED *BY* YEARS OF SERVICE



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and Clyde avenue, to be one-story, 100x240 feet, reported to cost close to $80,000, with equipment. It will be used for increased capacity. General contract has been let to Chase & Gilbert, Park Square Building, Boston, Mass.

Newark, N. J.—The Mono Service Company, Oraton street and Verona avenue, manufacturer of paper cups, etc., has filed plans for alterations in its plant, including the installation of a new elevator.

New York, N. Y.—The Harlem Card and Paper Company, 148 East 129th street, has leased the six-story building at 207-11 East 119th street, and will occupy for new plant. It is understood that company will remove present works to new location and develop increased output. Maurice L. Suskin is president.

Chicago, Ill.—The Bailey Wallpaper Company has recently taken over a building on West Twenty-fifth street, and is occupying for local operations.

Hoquiam, Wash.—The Hoquiam Chamber of Commerce has been in negotiations with interests headed by Clarence G. Blager and associates, for the establishment of a local pulp mill and project is expected to mature following a $100,000 bond issue for new pipe line construction for local water system, and which would be used in connection with water supply for proposed mill. The initial plant, as now projected, will be equipped for an output of close to 100 tons a day and is reported to cost more than $800,000, with machinery.

York, Pa.—The Schmidt & Ault Paper Company has completed the removal of their 40 inch cylinder and 66 inch Fourdrinier machines and the installation in their place of a 166 inch Beloit Fourdrinier. Light weight chip sheets, wrapping papers and specialties will be run on this machine, which has a maximum trim of 156 inches.

Manitowoc, Wis.—The Schnorr Brothers Company, South Tenth street, manufacturer of paper boxes and containers, is planning for the early rebuilding of portion of plant, destroyed by fire, February 14, with loss reported at close to $50,000, including equipment.

Waterville, Me.—The Hollingsworth & Whitney Company, 100 Milk street, Boston, Mass., has preliminary plans under way for the construction of an addition to the boiler plant at its mill at Waterville, reported to cost close to $40,000, with equipment. It is expected to proceed with work in the spring.

Hull, Que.—The E. B. Eddy Company, Ltd., Hull, has plans maturing for proposed new addition to local mill, recently referred to in these columns, and is now expected to begin work on the project early in April. The expansion will consist of main unit and auxiliary structures and is reported to cost more than $1,200,000, with machinery. It is understood that a battery of five new paper making machines will be installed, and that a portion of the plant production will be given over to coated stocks. V. M. Drury is president.

Liverpool, N. S.—The Mersey Paper Company, Ltd., is developing increased production at its news print mill, and the two initial machines, recently installed, with a combined capacity of 250 tons a day, are now running at close to 90 per cent of this rating. Expansion will be continued, and it is proposed to operate at maximum output at an early date. It is understood that the company has secured contracts for the majority of the news print capacity.

New Companies, Etc.

Dayton, Ohio—Consolidated Paper Stock Company has been incorporated with capital of 100 shares of stock, no par value, to manufacture and deal in paper stocks and paper products. The incorporators are Leon A. and S. and D. C. Slavin. The company is represented by Kusworm & Shamann, 414 Riebold Building, Dayton.

Brooklyn, N. Y.—The Grand Corrugated Paper Company, 128 32nd street, has filed notice of increase in capital from $350,000 to $500,000, for general expansion.

Brooklyn, N. Y.—Daniel Paper Box Company has been incorporated with capital of $10,000, to manufacture and deal in paper boxes and other paper containers. The company is represented by I. S. Goldstein, 403 East 138th street, New York.

New York, N. Y.—The Sonnenshein Paper Supply Company has been incorporated with capital of $5,000, to deal in paper stocks, containers, etc. Rasch & Richman, 261 Broadway, New York, represents the company.

Milwaukee, Wis.—The Transpara Paper Company has been organized by Harry G. Bach and Charles D. Rones, 480 Van Buren street, to manufacture paper goods. N. A. Karsten is also interested in company.

New York, N. Y.—Summit Paper Company, Inc., has been incorporated with capital of $20,000, to manufacture and deal in papers and paper products. The incorporators are William B. Kearney and John Klumpp. The company is represented by Charles K. Landesberg, 815 Broadway, Brooklyn, attorney.

Elizabeth, N. J.—Wall Paper Associates, Inc., has been incorporated with capital of $125,000, to manufacture and deal in wallpaper, etc. The company is headed by Jacob Pferferstein and I. Lucovsky; and is represented by Grossman & Kwalick, 1 Broad street, Elizabeth.

Kings Borough, N. Y.—Daniel Paper Box Company, Inc., has been incorporated with capital of $10,000, to manufacture and deal in paper boxes and containers. The company is headed by Morris Leonberg and Isadore S. Goldstein, 560 Melrose avenue, Bronx.

Chicago, Ill.—The Haggerty Paper Company, 327 South LaSalle street, has been incorporated with nominal capital of $5,000, to manufacture and deal in paper products of various kinds. Frank J. Haggerty, Sr., and Jr., and Frank J. Einhorn are incorporators.

Wilmington, Del.—Parchment Paper Company, care of American Guaranty and Trust Company, 1600 Delaware avenue, Wilmington, representative, has been incorporated under Delaware laws, with capital of 2,000 shares of common stock no par value, to manufacture and deal in parchment and other treated paper stocks.

Awards For Injuries

A number of injured paper mill workers received awards at a recent hearing in compensation court presided over by Judge Richardson. The largest award was received by George Henegan, who was injured while working for the Racquette River Paper Company, at Potsdam. He was awarded $1,500 for loss of the use of his arm. Gerald Forbes will receive compensation amounting to $1,196.65 for loss of the use of a hand while employed by the same firm.

George B. Genns, an employee of the International Pulp Company, at Gouverneur, was granted compensation of $557.75 for loss of a finger as the result of injuries while working. Claiming compensation for injuries to his elbow while working for the Brownville Paper Company, the case of Marvin Bellinger was dismissed because he had lost no time from work and showed no disability. Benny La Fave, of Carthage, was awarded $72.65 for injuries while employed on construction work at the West End Paper Mill.

Another Huge Storage Dam

Authority has been given by the Quebec Government to the Shawinigan Water and Power Company to carry out its development on the Mattawin River. The storage dam is located at the head of Bull Rapid, some 25 miles from St. Michel des Saints, and will be a regulator for the supply of water gathered in a basin some 1,600 square miles in area, making it available on the St. Maurice, on which the main plant of the Shawinigan company is located.

Refinancing

In few industries have advancements in manufacturing processes been so important as in the pulp and paper industry. Each major improvement has forced many mills to purchase new and costly units. A strong tendency toward specialization has forced many mills to discard adequate equipment and in its place substitute machines better adapted to their new requirements.

The need for new capital in order to keep abreast of these developments necessitates the presentation to financial markets of all pertinent facts in reference to a specific property, and its value.

American Appraisal Service is of vital importance in earning the confidence of bankers and investors through a clear-cut and authoritative presentation of a corporation's case. Such service may embrace not only a valuation of the physical properties, but a retrospective analysis of the property and depreciation accounts.

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Fuel Economizers or Air Preheaters

Factors to be Considered in Making Selection

Flue heat reclamation is unquestionably a matter of outstanding importance in effecting an economical heat balance, for if suitable devices for salvaging heat from the gases of combustion are not employed a good 25 per cent of the heat liberated in the boiler furnace, frequently much more, is sacrificed, much of it literally thrown away. Waste of this magnitude occurs, moreover, even though the boiler unit is a highly efficient steam generator and is reflected, obviously, in unnecessarily high steam costs.

Some of this heavy heat loss is occasioned by radiation, moisture and hydrogen in the fuel, carbon rejection in the ash, excess air supply, etc., and is in large part unavoidable, but the greater proportion, 60 per cent or so, simply goes up the stack. A considerable part of this heat rejected by the boiler can be salvaged, however, and productively employed. Either fuel economizers or air preheaters can be utilized for such purpose, or both of these types of heat reclaimers. With their aid, flue gas temperatures can be brought down from 600 or 700 degrees to 300 degrees Fahrenheit or even lower, cutting stack losses of from 15 to 16 per cent down to 5 or 6 per cent of the total heat generated in the boiler furnace.

The fuel economizer returns the recaptured heat to the boiler by elevating the temperature of the feed water supply, while the air preheater returns it to the furnace by elevating the temperature of the combustion air supply. Either device can make effective use of as much as 70 per cent of the flue heat otherwise lost. Both devices can be employed, but being more or less on a par so far as effectiveness in heat reclamation is concerned and the reclaimable heat being no greater when either one or both of the devices are employed, the advantages of combining the two lie, not in securing larger heat reclamation capacity, but rather in connection with the nature of the services for which the reclaimed heat is utilized.

In the discussion on air heaters published in these pages on January 30, 1930, it was pointed out that among the power plants generating steam at pressures in excess of 300 pounds per square inch fuel economizers were outnumbered three to two in flue heat reclamation service and that there were about as many of the new high-pressure plants employing air heaters alone as plants employing economizers either alone or in combination with air heaters. Also, there are about 50 per cent more of these modern plants using only air heaters for flue heat reclamation than there are plants utilizing both economizers and air heaters. Further investigation has also disclosed the fact that when both economizers and air heaters have been employed, the amount of air heater surface provided has been about a third greater than when only air heaters are used.

Commenting upon this situation, one of the leading manufacturers of both economizers and air preheaters[1] advises: "We have repeatedly found it to be the case that noticeably more air heater surface is required for the same economic rise in air temperature when economizers are also used than would be the case if air heaters are used alone. We have, of course, called our customer's attention to this situation where such combinations were proposed and while we have engineered and sold a number of them (combination systems) it (the practice of employing both fuel economizers and air heaters) does not appear to have been at all general. The economics of this problem usually gets so involved before the end of the preliminary engineering that for some good reason peculiar to each installation either the one or the other (fuel economizer or air heater) is applied and the combination proposition dropped.

"This situation was particularly noticeable during the years 1920 to 1924 when with the movement toward high boilers with air heaters the very existence of economizers in any form seemed jeopardized. At present however the movement seems to be in the opposite direction, economizers of considerably larger surface are being used to bring water to the steaming point and then using comparatively small boilers merely to do the work of evaporation."

These comments are highly illuminating and most pertinent, for while "fashions" apparently have been instrumental in arriving at decisions there should be no such facilations in approved engineering practices. Conditions have certainly not changed so much in the past decade as to justify partiality for one system of flue heat reclamation for the first half of the period and a trend toward the other system during the latter half. It would appear very much as if insufficient consideration had been given to the problem at just about the time when the plants which today exemplify advanced practices were being planned and designed. It takes from five to ten years to consummate dependable, practical working demonstrations in power plant developments and to accumulate authoritative service records.

The continued trend toward high-pressure steam plant operation, which is more pronounced in the paper making industry than in any other field of industrial activity, is unquestionably sound, but the question arises whether the most has been made of the possibilities afforded. If the trend is now directed toward fuel economizer heat reclamation, as opposed to the air heater system, at its height from 1920 to 1925, it would appear that the most has not as yet been made of these possibilities.

In connection with the apparent change in front regarding advocated flue heat reclamation practices, incidentally, the recom-

[1] B. F. Sturtevant Co.

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mendations advanced by another of the leading manufacturers of both fuel economizers and air heaters at the time when the trend appeared decidedly to favor air heater installations are of decided interest, providing as they do some basis of comparison between certain recommendations advanced even in those days, practices actually resorted to and what may still be considered advance practices. As the recommendations for effecting an economical heat balance represent what may well be termed a high standard, they may advisedly be quoted verbatim.

Heat Balance [2]

"Much study has been recently given to the subject of station heat balance and it may be said that power plant engineers have two general plans for obtaining a high overall station efficiency.

"One idea anticipates bleeding the main turbine unit at several points and utilizing the heat obtained to raise the feed water to as high as 350 degrees Fahrenheit. The heat in the waste gases exhausted by the boiler is reclaimed by a small economizer having about 30 per cent of the boiler surface, and a medium-sized air heater with about 50 per cent of the boiler surface, or by a large heater alone which may contain as much as 100 per cent of the boiler surface. The theoretical efficiency obtained by this scheme is high and it is also practically supported by the mechanical advantage of unloading the lower stages of the turbine. The installation requires three or four heaters, each operating at a different steam pressure, and a complicated system of piping to and from these. Furthermore, it is sometimes found difficult to provide suitable space in the boiler room for the air ducts from the air heater to the furnace. A few of these installations have been put in operation and some others are now under construction.

"The other idea of heat balance for obtaining a high overall efficiency is to heat the feed water to from 150 to 212 degrees Fahrenheit by one stage of turbine bleeding or by other exhaust steam, and to raise the temperature of this water by an economizer containing from 60 to 80 per cent of the boiler surface. The theoretical efficiencies of this scheme are not quite as high as the other, but the actual efficiencies, so far obtained in practice, are higher because of the greater simplicity of the apparatus required and its ability to operate under fluctuating loads. In these plants all but one of the bleeding heaters are eliminated and no air ducts are required in the boiler room. A marked advantage of this design of station is that the principal heat added to the boiler feed water is derived from the gases exhausted by the boiler. In the regular operation of a plant, overloads on the individual boilers do not necessarily correspond to the electrical load on the main turbine unit and the theoretical heat balance may be upset by heating the boiler feed with the turbine exhaust, when the turbine is operating at a low load.

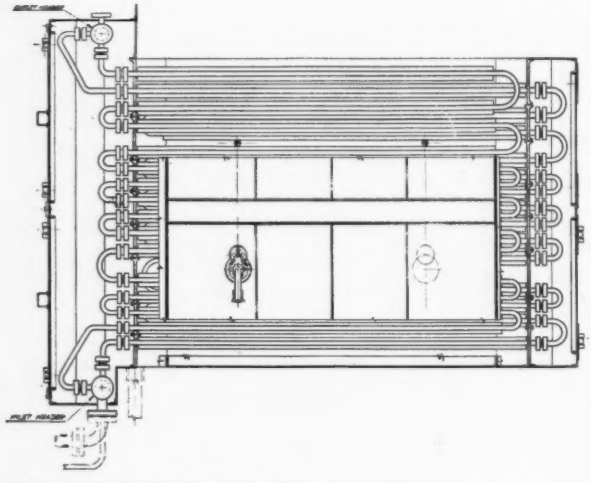
"It is claimed that the highest possible efficiency may be obtained by adopting the second scheme as above described and adding to it additional stages of turbine bleeding. The heat reclaimed by these is utilized to raise the temperature of the air used for combustion. In this case the air heaters are located immediately below the furnaces and permit of a simple duct arrangement."

In actual practice, as exemplified by the group of modern high-pressure steam plants investigated in connection with the discussion on air heaters, considerable divergence from such recommendations is apparent. In regard to installations employing both economizers and air heaters, for instance, the recommendations advocate the use of a small economizer having about 30 per cent of the boiler surface and a medium sized air heater of about 50 per cent of the boiler surface, or in lieu of such combination arrangement reclamation by a large air heater alone which might contain as much as 100 per cent of the boiler surface. Installations which have been made during the past few years, however, show that the average economizer has been provided with about 36.2 per cent of the boiler surface, with 68 per cent maximum and 19.8 per cent minimum. Furthermore, disregarding the relatively few installations employing of smaller than such advocated size, two-thirds of the installations place the average size of economizer installed as containing about 43.4 per cent of the boiler surface, or nearly 45 per cent more than specified. The conflict with the recommended air heater of about 50 per cent of the boiler surface has been even more marked, for the average has been an air heater with 133 per cent of the boiler surface, with 350 per cent maximum and 75 per cent minimum.

Where a large air heater alone has been employed, however, there has been much closer agreement with the recommendations, for the average installed unit has represented 96 per cent of the boiler surface, with 120 per cent maximum and 51 per cent minimum. These average values, incidentally, substantiate the findings of the manufacturer of heat reclaiming devices that noticeably more heater surface is required for the same economic rise in air temperature when both economizers and air heaters are employed. An explanation of this, in view of the fact that the heat reclamations by economizers and air heaters are made use of for different and quite unrelated services despite the similarity of the results secured, improved overall efficiency, is that when economizers are used the gases enter the air heaters at a lower temperature and it becomes necessary, consequently, to supply additional air heater surface for the most economical heat reclamation with the lowered temperature differential.

Where economizers alone have been employed for flue heat reclamation in these modern high-pressure steam plants, the recommendations that economizers containing from 60 to 80 per cent of the boiler surface have been adhered to much more closely, although here again there has been some divergence. Such differences have been more in the line of discounting the recommendations than in elevating them. The average economizer installation has contained 56.3 per cent of the boiler surface, with 81.3 maximum and 31.2 per cent minimum. This, of course, has placed the cost of a straight economizer installation more on a par with that of a straight air heater installation, so far as initial investment is concerned. Were both classes of installations made according to the recommendations cited, it is estimated that the first cost of the economizer system would be quite considerably more than that of the air heater arrangement. With

[2] Foster Wheeler Corp.



Courtesy: Combustion Engineering Corp.

FIG. 1.

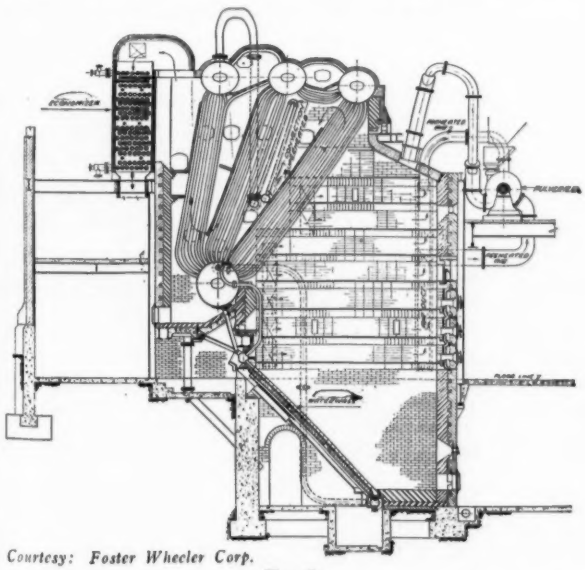
Compact and efficient type of modern return tube economizer, incorporating two separate water circuits, one running serially through the return bends on one side and the other through the return bends on the opposite side.

practices in operating plants, however, the difference in the equipment cost has been cut 30 or 40 per cent. The economizer is also a much more compact assemblage and costs very much less to erect, requires less space for its accommodation, has a useful life equalling or exceeding that of the boiler it serves and imposes a lower maintenance burden. In ultimate cost, consequently, the balance now might even seem to favor the economizer installation. This statement is made with some reservation, however, for while economizers have been used for a century or so, providing ample evidence for arriving at a reasonable and quite dependable "expectant life," air heaters for flue heat reclamation have been developed for the most part during the past decade, providing no service records comparable in dependability with those of economizers.

Selection of Heat Reclamation System

With the question of investment entailed for installation and upkeep more or less comparable, whether the balance swings slightly toward the economizer or the air heater installation, the reason for decreased dependence upon combination systems of flue heat reclamation becomes obvious. More air heater surface, 30 to 40 per cent more has been found required for the same economic rise in temperature when the combination arrangement is employed, compared with requirements when air heaters alone are used. This makes even the air heater portion of the combination arrangement actually more expensive than an all air heater reclamation system and, in addition, there is the cost of the economizer portion, which actual practice seems to have ordained should be about 66-2/3 per cent as large as an adequate economizer system without air heater adjunct. The total first cost of the combination arrangement, then, would seem to be very considerably higher than that for either a straight economizer or straight air heater reclamation installation.

The choice between the two systems of flue heat reclamation, since there is no great difference in the effectiveness of the respective methods, either in respect to ultimate cost or efficiency in operation, should be governed, consequently, by the services made of the reclaimed heat. Where the fuel is burned in pulverized form, a supply of heated air is virtually essential for the proper combustion of the fuel, as primary air introduced into the furnace with the fuel and also as secondary air introduced around the burners to increase turbulence and support combustion. Preheated combustion air also accelerates ignition and tends to effect more complete combustion, whether the coal is burned in pulverized form or is stoker fired. These are all counts which favor the selection of the air heater system of flue heat reclamation and without doubt they have been important considerations in creating the marked preference for the method in those plants designed five to ten years ago and only recently providing service records suitable for dependable guidance.



Courtesy: Foster Wheeler Corp.

FIG. 2.

Boiler layout of paper mill employing convection superheater, air cooled side walls and water cooled bridge wall, fired on pulverizer fuel. Heated air for combustion and fuel preparation requirements is drawn from the air cooled walls.

The fact that in recent years, say the last five, there has been a marked trend back to economizer flue heat reclamation is indisputable indication that there are other factors to be considered than simply those which clearly favor the air heater method, factors overlooked during the period of practical development of efficient pulverized coal burning systems. Under operating conditions pertaining to industries and activities where the steam demands are not confined in major part to demands for power, considerations pertaining to the heating of the feed water supply assume increased importance in the economical operation of the modern high-pressure steam plant, also in low-and medium-pressure plants where the attainment of low steam costs is of dominant importance.

Feed Water Heating

Where air heater flue heat reclamation is practiced, the effective and economical heating of the feed water has come to entail the bleeding of the main turbine at several points or its equivalent, in effect synchronizing the steady demands with the power demands. This is essential for creating and maintaining an economical heat balance where steam and power requirements coincide. However, where the demands for steam do not necessarily conform with the demands for power, a situation which is particularly pronounced in the plants serving the pulp and paper making industries where the demands for process steam not only predominate but may well come at periods of relatively light power demands, there is grave danger of unsettling the economical steam balance by excessive turbine bleeding.

If the heavy demands for steam, entailing coincident requirements for heavy feed water heating, occur during periods when the power demands are low or even when they are normal there is a lack of steam passing through the turbine for economical steam bleeding of sufficient volume to elevate sufficiently the temperature of the necessarily stimulated feed water supply for economical boiler operation. Either the feed water has to be fed to the boiler at a reduced temperature, adding to the already aggravated work of the boiler, or resort has to be made to excessive high stage steam bleeding, possibly a supply of high-pressure live steam added as well, in order to provide the necessary heat for maintaining the desirable high temperature of an abnormal feed water supply. Such excessive bleeding and use of high-pressure steam burdens the turbine and at a time, if the power demand is low, when every effort should be made and aid rendered to keep the turbine's steam rate low.

Where the economizer system of flue heat reclamation is employed, such disturbance of the economical heat balance can be avoided in large part, even though the preliminary heating of the feed water before it enters the economizer entails a stage of turbine bleeding. The heavy steam demand naturally stimulates furnace activity, increasing the temperature of the products of combustion entering the economizer, so even if the preliminary heating of the feed water supply is not carried to quite as high a point as under less aggravated feed water heating demands, due to lack of adequate exhaust or extraction steam, the greater temperature differential, the temperature of the water entering the economizer being somewhat lower and the temperature of the gases entering the economizer somewhat higher, serves to elevate the capacity of the economizer and its effectiveness in feed water heating. Furthermore, heat returned into the boiler their respective proportions established by average installation

is more effective in reducing steam costs than the same amount of heat returned to the furnace.

Circumventing the costly heat balance disturbance in this way, however, provides no source of heat for creating an adequate and highly desirable supply of preheated combustion air. Such omission, fortunately, can be readily overcome in a number of ways, and without imposing any undue burdens. For example, if air cooling of the furnace walls, in whole or in part, is resorted to, a source of hot air is available. Likewise, an air heater located immediately below the boiler furnace, to avoid long and undesirable duct connections, can be heated quite economically by extracted or exhaust steam. In fact, the amount of heat required to elevate an adequate supply of combustion air sufficiently is relatively small and a greater tolerance is permissible in air temperature variation than in that of feed water temperature, so the supply of the necessary heat presents no great problem.

Modification in Boiler Design

With a clearer understanding of the factors tending to develop the high effectiveness of economizer flue heat reclamation, the possibilities of further advantages to be derived by certain modifications in boiler design command more attention. Considering the economizer, not simply as an accessory to the boiler, but rather as a device which can be made use of to take over some of the less effectively discharged work of the boiler will also assist in forming an appreciation of the value of modifications in boiler design promised by the present trend toward greater dependence upon economizer flue heat reclamation.

The major part of the work done by the boiler is in that section of the steamer where the surface is exposed to radiant heat and in the first pass. In the later passes, the activity of the boiler is greatly reduced, owing to the lowered differential between the temperatures of the boiler contents and of the gases already deprived of much of their heat, and because of the unavoidable limitations imposed on heating surface areas in such sections. With the feed water now supplied at close to steaming temperature at boiler pressure, as can readily be done with the modern economizer of considerably larger surface than was formerly provided, the boiler proper is relieved of most of the work preceding the actual conversion of water into steam from and at boiler temperature, *i.e.*, the actual work of evaporation. With the feed water supply already at or near steaming temperature at boiler pressure, the conversion of the water into steam takes place almost immediately and the more sluggishly acting portions of the boiler can be dispensed with, being in effect replaced by the economizer. The work of the boiler approaches more nearly that of a "flash boiler" and its size, consequently, can be somewhat reduced.

In decreasing the size of the boiler, the reduction in heating surface is advisedly effected by cutting down on the height or depth of the rows of tubes, rather than by any lessening of the width of the boiler, as by so doing the rate of combustion is not excessively increased and the furnace walls are not subjected to destructive temperatures. The reduced heating surface is compensated for, of course, by a proportionally greater increase in economizer surface, the same limitations as to area not being imposed on economizer surface as upon the supplanted boiler heating surface.

The removal of heating surface from boiler to economizer, of course, imposes a limit to the reduction in temperature of the gases while they are in the boiler. In fact, the gases leave the boiler at decidedly higher temperature, but these hotter gases serve to increase the capacity of the modern economizer and to stimulate their effectiveness in heat reclamation. It is even possible to proportion the economizer so that the temperature of the gases leaving the device and passing to the stock is actually below that of the water leaving the economizer and passing to the boiler.

TABLE 1
PERFORMANCE RECORDS—1923 INSTALLATION

Duration of run, hrs.	21.60	26.45	22.03	24.53	23.93	24.98
Power developed by unit, B.hp.	1,830	3,150	4,740	6,280	7,920	9,420
Percentage of rated capacity, per ct.	54	94	140	183	230	272
Steam pressure, gage, lbs./sq. in.	251	250	253	254	357	265
Superheat, deg. F.	172	186	228	284	302	275
Gas temperature at economizer inlet, deg. F.	408	439	493	545	588	633
economizer outlet, deg. F.	174	203	229	252	274	318
drop through economizer, deg. F.	234	236	264	293	314	315
Water temperature at economizer inlet, deg. F.	123	143	157	143	147	153
economizer outlet, deg. F.	215	219	242	247	259	265
rise in economizer, deg. F.	92	76	85	104	112	112
Draft in flue leaving economizer, in. w.g.	.02	.06	.22	.55	.94	1.54
entering economizer, in. w.g.	.17	.57	.82	1.98	3.18	5.15
loss through economizer, in. w.g.	.19	.51	.60	1.43	2.24	3.61
Fuel saving effected by economizer, per cent	8.2	6.8	7.5	9.1	9.9	10.0

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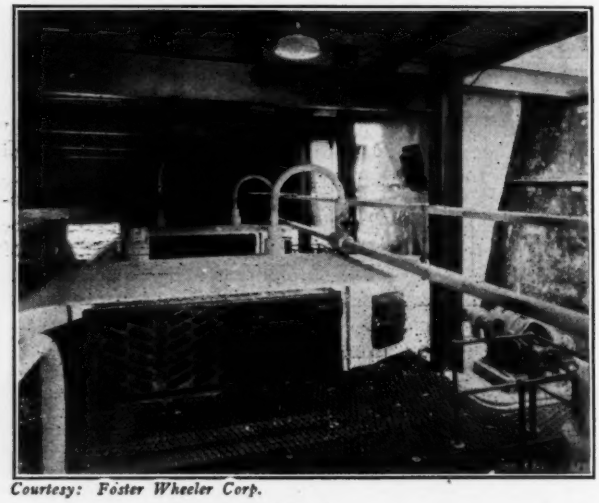
Performance Records

While such marked efficiency in flue heat reclamation is not as yet common to commercial economizer installations, possibly never will be for the reason that the additional cost of building the heat reclaimers to secure such effectiveness in heat reclamation may be out of proportion to the value of the relatively slight increase in attainable heat salvage, the performance records of typical economizer installations are in themselves sufficiently favorable to command attention. It is not even necessary to pick and chose examples from very recent installations, though doubtless some of these would show considerably greater proportional savings. The statistics given in the accompanying



Courtesy: Foster Wheeler Corp.

FIG. 3.

Economizers serving 500-horsepower boilers in a New England paper mill power plant depicting the compactness of such heat reclaiming devices. To conserve space to the utmost, the economizers are placed on their sides.

TABLE 2
ST. REGIS PAPER COMPANY, DEFEREIT, N. Y.—OPERATING DATA, DECEMBER, 1927, PULVERIZED COAL PLANT

Steam pressure, lbs./sq. in.		150
temperature, deg. F.		476
superheat, deg. F.		110
Feed water, temperature entering boilers, deg. F.		256
temperature entering economizers, deg. F.		198
Flue gases, temperature leaving boilers, deg. F.		465
temperature leaving economizers, deg. F.		304
Fuel used, coal as fired, lbs.		4,735,900
equivalent dry, lbs.		4,567,300
Weight of water fed to boilers, lbs.		51,073,000
steam generated, lbs.		49,821,000
Evaporation, factor for water entering economizers		1.124
total equivalent from and at 212 deg., lbs.		55,999,000
equivalent from and at 212 deg./lb. equivalent dry, lbs.		12.26
equivalent from and at 212 deg./10,000 B.t.u., lbs.		8.72
Boiler rating developed, per cent		159.0
Efficiency of boiler and grate, per cent		80.1
plant with economizers, per cent		84.6
Final coal analysis (dry), B.t.u./lb.		14,038
Moisture as fired	3.56 per cent	
Volatile matter, dry	21.44 per cent	
Fixed carbon, dry	70.35 per cent	
Ash, dry	8.21 per cent	

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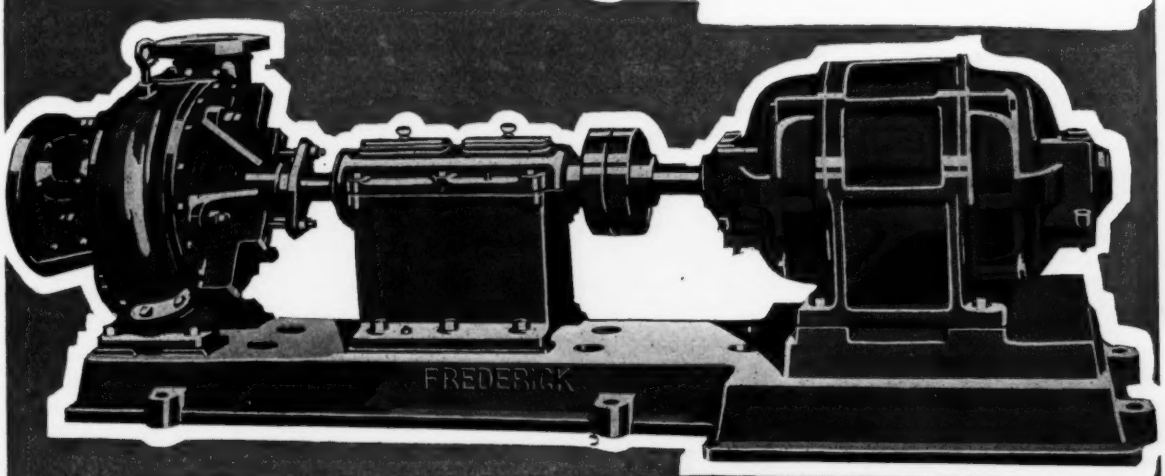

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tables will suffice, one listing performance records for a 1923 installation and another the operating data for the month of December, 1927, at the Defereit plant of the St. Regis Paper Company.

The daily log of the older installation shows that, under operating conditions covered by the no inconsiderable range of performance at from 54 to 272 per cent of rating an average of somewhat better than 53 per cent of the heat escaping from the furnace was reclaimed by the economizer, effecting an average increase in temperature of preheated feed water amounting to 92.5 degrees Fahrenheit. The table also gives the daily saving in fuel consumption effected by the economizer. While this record was not equaled at the St. Regis Paper Company plant, the operating data of which is given in the second table, an average of 35.3 per cent of the heat rejected by the furnace was salvaged, effecting a mean rise in preheated feed water temperature of 58 degrees and an improvement of 5.6 per cent in plant efficiency.

OPERATING BALANCE SHEET
THREE FUEL ECONOMIZERS—P. H. GLATFELTER COMPANY, SPRING GROVE, PA.

Investment entailed		$25,350.00
EXPENSES		
Depreciation (based on 10 year life)	$2,535.00	
Interest charges [3]	836.55	
Cleaning costs, quarterly (120 hours)	60.00	
semi-weekly (52 hours)	26.00	
daily, blowing (306 hours)	183.60	
Power to supply draft losses (18,360 kwh.)	367.20	
Total operating cost of economizers per year		$4,098.35
per day		13.39
SAVINGS EFFECTED BY ECONOMIZERS		
Average steam consumption per month, lbs.		75,000,000
Average rise in temperature through economizers, deg. F.		45
Coal equivalent to recuperated heat per month, tons		116.3
Additional coal required per month per boiler, tons		178.7
Saving in coal per month (178.7 × $5.00)		$895.50
Total saving per year (coal)		$10,722.00
Total operating cost of economizers		4,098.35
Net saving per year		6,623.65
Net annual return on investment		26 per cent

[3] Allowing for interest earned by depreciation account.
B. F. Sturtevant Co.

The final tabulation, a sort of balance sheet of expenses and savings in connection with three economizers serving the boiler battery of the P. H. Glatfelter Company at Spring Grove, Pa., gives some idea of the financial aspects of this installation. The results tabulated, however, are badly on a par with those secured in more recent installations, two of the economizers having been in service for over seventeen years and the other in operation for seven years. Despite its age, the installation shows a net annual saving of $6,623.65, representing a net yearly return of 26 per cent upon an investment which was liquidated years ago. Incidentally, the average rise effected in temperature of the feed water supply is only a matter of 45 degrees Fahrenheit, which is but a small proportion of what is daily effected in the more modern high-pressure steam plants employing economizer flue heat reclamation.

From even these relatively old records alone, which have been presented to guard against the appearance of placing too great dependence solely upon the reports concerning more modern economizer installations, it would certainly seem that the renewed interest in fuel economizers for flue heat reclamation is well justified and that any mill seeking to reduce its steam costs will do well to investigate carefully the time-honored method of salvaging heat by means of economizers as well as by the more recently developed method of air heater reclamation. It certainly will pay to do so, whether a stoker or a pulverized coal system of combustion is contemplated, and the wise selection will be the one dictated by the most favorable heat balance under all conditions of operation, with steam demands for power and process requirements in and out of step.

American Coating Mills Increase Directors

Officials of the American Coating Mills, Inc., of Elkhart, Ind., have filed papers with the secretary of state changing the number of directors to eleven.

Canadian Paperboard Liquidates

While it is announced from Montreal that the Canadian Paperboard Company, Ltd., with headquarters in that city, has gone into liquidation, G. T. Clarkson, of Toronto, who has been appointed receiver and manager, stated that it is contemplated that the company's business will continue without interruption.

"I wish to make it clear to customers, bond holders and creditors," Mr. Clarkson added, "That the proceedings were taken not for the purpose of liquidating the affairs of the company, but in order to permit a re-organization of its financial structure."

The Canadian Paperboard Company's fiscal year comes to a close on March 31. The statement covering the fiscal year ending March 31, 1929, showed that while there had been an increase in sales, the cost of sales and of operation had increased to such an extent that the net profits were lower than for the previous fiscal year.

Sales for the fiscal period were $1,950,747, compared with $1,777,014 for the year ending March 31, 1928. At the same time, gross profits dropped to $255,819, compared with $287,283 in the previous year. Bond interest accounted for $77,721, and after dividends and other charges were taken care of the surplus for the year amounted to $866. When that was added to the surplus carried forward from the previous year the total stood at $104,673.

Accordingly, on March 31, 1929, the postion of the company was fair, but owing to the competition and other business conditions which have developed since that time the bond holders made application, on February 11, in Montreal, for the appointment of a receiver. Mr. G. T. Clarkson was appointed receiver and manager under the Bankruptcy Act.

The statement in that connection was that the company's financial affairs had reached an impasse, the company lacked the funds to proceed with its regular business, and it was decided upon a reorganization of the capital structure.

TAPPI Notes

Sidney D. Wells, formerly director of the Paper Mill Laboratories, Quincy, Ill., has just gone with the Nekoosa Edwards Paper Company where he has charge of research and technical control.

Donald I. Adcook, formerly with the International Paper Company, New York, has taken a position with the Individual Drinking Cup Company at Easton, Pa.

Albert E. H. Fair, who has been in Belmont, Mass., for the past year or so has moved back to Merritton, Ont.

Saul M. Silverstein, formerly director of industrial research division of Bigelow, Kent, Willard & Co., of Boston, has taken a position with the Rogers Paper Manufacturing Company, South Manchester, Conn.

Asbjorn Aasen who was draftsman at the Valley Iron Works for several months is now with M. W. Kellogg, digester manufacturers in Jersey City, N. J.

L. S. Sabatke, formerly assistant paper maker of the U. S. Bureau of Standards, Iowa State College, has become superintendent of pulp preparation and chemist of the Maizewood Products Corporation, Dubuque, Iowa.

Joseph Heddin, formerly with the Union Bag and Paper Power Corporation, of Tacoma, Wash., is now with the Crown Willamette Pulp and Paper Company in Portland, Ore.

To Prevent Spring Floods

In order to prevent spring floods and possible shutdowns in the paper mill section of the Fox River Valley, the United States enginering department has opened sluice gates of the dam at Menasha, Wis. This will carry a larger amount of water out of Lake Winnebago through the Fox River to Green Bay. The lake thus will be at a much lower level so heavy snows and a rapid spring thaw will not bring an overload of water into the power district later in the season.

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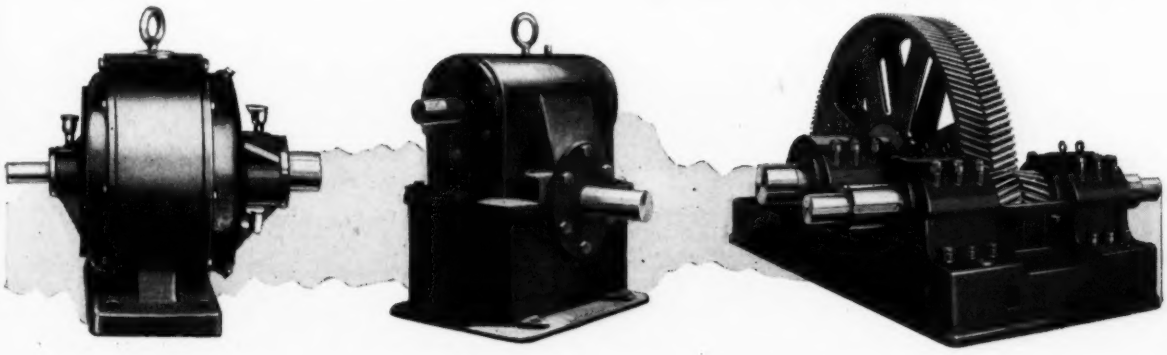

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THE GROWTH OF TAPPI

One of the most interesting features of the annual meeting of the Technical Association of the Pulp and Paper Industry was the report of the progress made by the association during the past year. For the first time in its history the association membership exceeded one thousand members. Each of the past three years has seen membership increase figures break all preceding records.

In addition to the numerical growth it is increasingly evident that the organization is becoming much more useful and is contributing greatly to the progress of the industry.

To be sure a company should have a staff of technically trained men properly to take advantage of the information furnished by the association and never before were competent engineers and chemists more greatly needed. A few large companies recognize this fact and have built up technical organizations that have been responsible for giving them an enviable standing in the industry both from the standpoint of quality of product and profit-making accomplishments.

Such organizations have appreciated the fact that aside from the engineering and chemical background of technical school graduates they also possess a mental discipline that qualifies them to study manufacturing problems in terms of fundamentals rather than in terms of precedure. Few men coming from technical schools have had much practical experience in pulp or paper mill operation but most of them are willing to pay the price of hard labor to get this experience and it has been very evident that the aforementioned mental discipline enables them to do this in a relatively short time and to become useful components of pulp and paper mill organizations. Of the companies that are showing unsatisfactory profits at the present time none have technical organizations of any consequence. It is such companies that should at this time take a lesson from their more prosperous competitors who have been riding on the crest of the wave by virtue of competent technical guidance.

Membership in the Technical Association has come to be recognized as an indication of a man's standing in the industry. Its membership requirements are of a high standard and will probably be raised as the association grows in prestige and recognition by the industry. Of special interest has been the large number of practical superintendents who have qualified for TAPPI membership during the past year or two. These men for the most part do not have a college degree but have reached their present positions by giving themselves the equivalent of a technical training. They have been alert to new developments and open-minded enough to take advantage of the industrial trend toward research and technical control. Such men are in sympathy with the efforts of the younger men who lack their experience but are fresh with ideas based upon the fundamental sciences of chemistry and physics. When such harmony exists mutual benefit is derived and the industry moves forward.

The Technical Association with its membership well beyond one thousand has begun to come into its own and is destined to be a dominant factor in the future of the industry. It is not difficult to look ahead but a few years to see its membership doubled and its accomplishments measured in terms of hundreds of thousands of dollars to this great industry.

The PAPER TRADE JOURNAL wishes it continued success in its enthusiastic and worthwhile endeavors.

SWEDEN'S "GREEN GOLD"

Sweden's "green gold"—its immense timber supply—has according to a press dispatch from Stockholm, been counted in a national forest survey, which has been completed after seven years of work and at an expense of about $4,000,000.

Although final statistics are not yet available, the preliminary figures show clearly that at the present rate of cutting Sweden's timber supply is permanent. This is all the more important to the country, inasmuch as the value of Sweden's export of lumber and other forest products is more than half of that of all other exports combined.

The survey was conducted with the aid of the Swedish Forestry College.

About 10,000,000,000 trees were recorded by the various gangs, each headed by a forester, who trekked through the woodlands from the extreme south to the Lapland Mountains north of the Arctic Circle.

Everywhere the surveyors were heartily received and their visits helped to strengthen in the public mind the importance of the Swedish forests in the nation's economic life. In the seven years a total distance of more than the circumference of the globe was covered. In many cases the progress was slow and difficult, especially where no paths were available.

The preliminary figures show that the annual regrowth amounts to more than 40,200,000 cubic meters (1,149,622,800 cubic feet) without bark, whereas the most optimistic advance calculations had put it at 35,500,000 cubic meters (1,183,018,000 cubic feet) with bark.

The entire supply of standing timber is approximately 1,500,000,000 cubic meters (52,971,000,000 cubic feet) without bark, or 400,000,000 cubic meters (14,125,600,000 cubic feet) more than expected.

One important benefit of the survey is the aid it has given to the forest fire insurance business. Whereas formerly the value of a

timber tract could only be guessed at, exact figures are now available.

The head of the survey committee is Professor Henrik Hesselman, one of Sweden's foremost forestry experts. Other members are J. Oesiind, Professor Tor Johnson and Wilhelm Ekman. The committee is collecting the statistics on the last 10 per cent of the forest area, surveyed last summer, and expects to pass the better part of 1930 in tabulating the results of its seven years of work.

Major Porter Heads Trade Assn. Executives

Major O. M. Porter has just been elected president of the Trade Association Executives in New York City. He served the organization as its secretary for several years and then as its vice-president, and now has been elected to the presidency for the unexpired term of George V. Horgan of National Paint, Oil & Varnish Association resigned on account of ill health.

TAE in New York City is the local branch of the national organization of A.T.A.E. It has a membership of about 150 and meets monthly to discuss problems common to the trade association executives serving many industries.

Other paper trade association secretaries in TAE are: Thos. J. Burke, Cost Association of the Paper Industry; H. A. Dickie, Label Manufacturers National Association; Paul S. Hanway, American Waxed Paper Association; R. S. Kellogg, News Print Service Bureau; E. H. Naylor, Writing Paper Manufacturers Association; Jesse H. Neal, American Paper and Pulp Association; H. E. Roden, Metropolitan Paper Box Manufacturers Association; Charles R. Stevenson, Bureau of Envelope Manufacturers; H. C. Whittemore, Wholesale Stationery Association of the United States.

New Swedish Wall Board Mill

The new wall board factory which is under erection at Ornskoldsvik in Sweden, is rapidly nearing its completion according to Ivar Lundbeck who is in charge of the plant.

Mr. Lundbeck called at the TAPPI office last week. He arrived on the *Aquitania* for a six weeks' visit here in order to make final arrangements with supply houses for shipping of remaining machinery. One building has already been completed.

The work is carried on very rapidly and Mr. Lundbeck expects to have his plant in operation around October 1st. The plans are to further expand the factory for a production of 60,000 tons a year if market conditions warrant such development.

The plant is very much up to date with several quite revolutionary designs. It is all electric, including electric steam generator and is equipped with the latest improvements in beaters, driers and conveying facilities. A pier for two steamships of ocean class is arranged about 100 yards from the factory, making unloading and shipping very convenient. A private railroad runs through the factory yard connecting it with the Swedish State Railways, so that shipping can take place even when navigation is closed.

Finnish Paper Production

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 5, 1930.—Paper production in Finland during 1929 is reported to have reached approximately the same total as in 1928, that is around 305,000 metric tons. Exports also were about on a level with the preceding year. The home demand was satisfactory, showing increased consumption. Labor conditions were considered normal. Adverse factors to the development of the industry continued to be heavy taxation, high interest rates, heavy customs duties on machinery, and in a large measure, difficulty in obtaining capital. In the chemical pulp industry new records were made both in production and exports. Compared with 1928, the volume of output increased by 7½ per cent and exports by nearly 3 per cent.

Bayless Salesforce Reorganization

The Bayless Pulp and Paper Corporation, of Austin, Pa., has completed the reorganization of its sales force and has opened sales offices in the Court Square Building at 2 Lafayette street, New York City, with district branch sales offices in the Garrett Building at Baltimore and in the Fidelity-Philadelphia Trust Building at Philadelphia.

Thomas W. Cole has been appointed general sales manager with headquarters at the New York office, and D. S. Scott has been appointed assistant sales manager. Mr. Cole is well and favorably known in the coarse paper field and Mr. Scott is very well known, as he has been selling Bayless papers for a number of years due to his association with A. N. Waring, former sales manager.

The Baltimore office, 514 Garrett Building, is jointly managed by C. Wilson Wood and L. K. Mallinockrodt, district sales managers, where all sales matters will be handled covering the states of Maryland, Virginia, West Virginia, Delaware, District of Columbia, Youngstown, Ohio and Pennsylvania, except the towns of Allentown, Bethlehem, Easton, Norristown, Pottsville, Pottstown, Philadelphia and Reading, which will be under the supervision of C. T. Elliott, district sales manager, with offices at 628 Fidelity-Philadelphia Trust Building, Philadelphia, Pa. C. Wilson Wood will assist and cover the entire territory described above.

The company manufacturers a line of sulphite papers made from both hemlock and Mitscherlich pulp, used not only in the general wrapping paper field, but also by converters, and sold under the well known brands of Hytest, Keystone Parchment, William Penn and Red Cap Fiber.

Pacific Coast TAPPI To Meet at Longview

The spring meeting of the Pacific Coast Section of the Technical Association of the Pulp and Paper Industry will meet on April 5 at Longview, Wash. Extensive preparations are being made to have this one of the best attended and most interesting meetings held on the Coast.

Representatives of pulp and paper companies, supply and equipment companies, scientific institutions and other interested bodies who may be traveling in the west are invited to attend the meeting and any member of TAPPI who may be interested in preparing a paper for the meeting is requested to write to the secretary of the Pacific Coast Section, Prof. H. K. Benson, Department of Chemical Engineering, University of Washington, Seattle, Wash.

Arrangements for the meeting at Longview are being taken care of by R. S. Wertheimer, manager of the Longview Fibre Company, who is chairman of the section, and Ralph Reid, chief chemist of the St. Helens Pulp and Paper Company, St. Helens, Ore., who is vice chairman. Sessions will be held in the morning, afternoon and evening of April 5, 1930.

News Print Report Expected Soon

WASHINGTON, D. C., March 5, 1930.—The Federal Trade Commission has not yet completed its final report on the news print industry but "it is expected that it will be forwarded to Congress before the present session closes," according to announcement just made.

The inquiry is directed to the question of "whether any of the practices of the manufacturers and distributors of news print paper tend to create a monopoly in the supplying of news print paper to publishers of small daily and weekly newspapers or constitute a violation of the antitrust laws."

Field work on this survey has been carried on in different parts of the country since the Commission began the inquiry in March of last year .

While experts of the Commission refuse to discuss the report prior to its being sent to Congress it is not believed that the report will show anything very detrimental to the American industry.

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By CARL R. MILLER

No. 2 in a series of advertisements describing the position of The Mathieson Alkali Works in the Chemical Industry

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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Heat Requirements for Machine Rooms*

By A. E. Montgomery[1]

The value of the machine room heat requirements in determining production costs is obvious to the technical and operating men of any paper or pulp mill. Its analysis to yield figures suitable for comparison with other mills or even with other rooms in the same mill is extremely desirable to permit rational design and efficient operation of machines and machine rooms. The variety of equipment and methods of operation in use in the industry are about as numerous as the machines, complicating a direct comparison of steam economies.

There are various bases suitable for the expression of the requirements of heat. The method common to the trade of stating steam economy as pounds of steam required per ton of product has much to recommend it owing to its wide usage. It has, however, the serious disadvantage of being affected by differences in steam pressure and condition and by differences in the moisture content of paper going on and leaving the dryers. Its use in evaluating the various items encountered in the heat balance consequently may become quite involved.

Heat units (B.t.u.) offer a satisfactory means of overcoming this difficulty and will be chosen for the basis in this discussion. The requirements may be struck above some datum temperature or may consider the net heat effect of each item entering into the total. The latter method is simpler, besides possessing several other advantages, and has been followed in preparing this paper.

The function of the paper machine is to produce a continuous web of relatively dry paper from a slush stock containing a large amount of water. The machine is divided into a wet end where some of the water is removed mechanically and driers where moisture is removed by evaporation. Both mechanisms occur to some extent at the wet end while only evaporation takes place on the driers. The division of the load of water removal between the wet end and the driers varies widely with different installations and can only be mentioned in this paper. While it is true that any evaporation from the wet end is only incidental to the presence of large surfaces of water and of sprays, and has no direct bearing on the removal of water from the stock at this point, the problem still exists of removing the water which evaporates on the wet end and of maintaining humidity and temperature conditions at this point, as well as throughout the machine room, within limits which will induce efficient operation by the tenders.

The heat required to take care of this wet end evaporation is the first item which is encountered. It includes the latent heat of evaporation of the water and the sensible heat in the air necessary for its removal. The amount of this air will depend on its temperature and humidity, but is usually large on account of low temperature and low carrying capacity. It is of especial importance that working conditions around the wet end be maintained at a suitable level to encourage efficient control of formation. High temperature, high humidity and dripping at this point are very undesirable.

The second item of importance is the heat required to raise the fiber and its adhering water from its temperature leaving the wet end to the temperature at which evaporation on the driers occurs. Wet end temperature will depend on the temperature of the slush stock, while the temperature of evaporation on the same types of machines will be determined largely by the steam pressure employed in the drier rolls.

The heat employed for evaporating water on the driers is usually the largest single heat requirement of the machine room. It includes the latent heat of evaporation of water at the evaporating temperature, plus any superheat contained in the vapor as it leaves the machine room, plus the sensible heat contained in the air required to carry off the moisture.

In most cases, on open machines at least, the exit temperature of the water vapor is below the evaporating temperature, and this drop in sensible heat loss must be credited to this item because it will be evident that this lowering of the vapor temperature from the evaporating temperature to the temperature at which it leaves the machine room is a recovery of heat which is used to heat air for carrying out the moisture.

In many drying systems the amount of air required is large, and sometimes undue emphasis is given to the temperature at which it leaves the machine room. It should be clearly understood, however, that this loss is not as great as it may appear because the air passes under the hood at practically room temperature, and the heating from that point up to the exit temperature from the building is secured partly from radiated heat from the driers, but in very large measure from the cooling down of the vapor after the vapor has left the paper, so that this rise in temperature may be considered part of a cycle of heat recovery from the vapor except that this part of the heat recovery is done without the use of any appliances, or devices, but is a natural result of the conditions. In a vacuum system, the quantity of air involved in this item is that due to unavoidable leakage through the seals, drier shell, and fittings, and air that may be used to remove the moisture evaporated from the wet end of the machine. Measure of loss in that case will also be from room temperature.

The paper leaving the driers carries with it a small amount of

* Presented at annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 18, 1930.
[1] Member TAPPI. Engineer, J. O. Ross Engineering Corp., Chicago, Ill.

sensible heat as measured by the excess in exit temperature of fiber and retained moisture over the evaporating temperature on the driers. This item is practically constant from one installation to another provided the paper be dried to below ten per cent moisture content.

The other loss, which would be true in any system, is the loss due to radiation in the building, which can be measured by the drop in temperature of the air which is used to heat the building from its temperature when entering the room to the room temperature. Of course if warm air is not used to heat the room, but radiation coils, or radiation from hot surfaces, that radiation will be the heat loss due to radiation from the building and will take the place of the heat loss caused by the drop in hot air temperature to the machine room temperature in air systems.

On the other side of the ledger must be considered the items which concern the source of heat.

The major source of heat will in general be steam fed to the driers. The heat supplied to the driers will be the net heat removed from the steam. As previously pointed out this will vary with steam temperature and condition.

Heat may also be supplied to the room by heater coils or unit heaters designed to maintain a comfortable working temperature around the machine. Heat from electrical equipment, steam mains or other incidental sources, while usually small, should be included under this item.

The use of heated air to accelerate drying or increase machine capacity affords a third important source of heat supply. This item may be readily measured at the point where the air is heated and is often of very considerable importance.

A source of heat to be considered is one often inadvertently neglected, although it usually is of appreciable magnitude. This item comprises the heat added to outdoor air by passage through other parts of the mill, previous to its use in the machine room. If this heat were not supplied by the heating and ventilating equipment in the other room it would be necessary to supply the heat directly. The heat required for this purpose is the same regardless of where it is added.

The other item of heat source is heat recovered in the system. While it is possible to consider this as a credit to be subtracted from the heat requirement side of the ledger it is felt that its value is more clearly demonstrated by considering it as a heat source. Under this item is included all heat recovered whether utilized directly in the machine room or elsewhere in the mill. The largest amount of heat available for recovery is the latent heat of condensation of vapor removed at the wet end and on the driers. Since this is closely related to the sensible heat in the carrying air their recoveries will be considered together. There are at present only two practical methods of recovering this heat: one is to heat air; the other is to heat water. The air may be used both for supplying the air requirements of the machine room and for heating and ventilating other parts of the mill. Where warm water is of value this offers a suitable outlet. Unfortunately, however, the temperature level at which this heat is available is quite low and while air at 80 degrees F. is of value in the winter time the economic advantage of heating water to the same temperature is dubious. In any case the final criterion for the inclusion of heat recovery in considering steam economy depends on whether it displaces steam previously consumed. The sensible heat in the fiber and residual water although small is usually completely recovered in the mill.

These items have been summarized in Table 1 to illustrate their bearing on steam economy. Since Heat Source must equal Heat Requirements in a heat balance, the sum of the Heat Source items (F-J) is determined by the magnitude of the sum of the requirements (A-E). An increase in steam economy can only be obtained by reducing one of the steam source items or increasing Heat Recovery.

HEAT REQUIREMENTS

A. Wet end evaporation
   (1) Latent heat of evaporation
   (2) Sensible heat in carrying air
B. Heating fiber and water to evaporation temperature
C. Evaporation on driers
   (1) Latent heat of evaporation
   (2) Superheat in vapor
   (3) Sensible heat in carrying air
D. Sensible heat in fiber and residual water
E. Radiation and convection losses

HEAT SOURCE

F. Steam in driers
G. Steam in heaters
H. Steam in air heaters
I. Steam used in other rooms to preheat air which enters machine room
J. Heat recovered
   (1) Latent heat of condensation
   (2) Sensible heat in carrying air and vapor
   (3) Sensible heat in product

It has been the object of this paper to stimulate interest in arriving at a proper understanding of the items which must be considered before any attempt is made to arrive at a heat balance.

These items must have assigned to them definite amounts of B.t.u.'s required for any type of paper machine and then, on the opposite side of the ledger, must be listed the sources and amounts of heat units available to supply the requirements.

It will be evident that before any figure can be given for total B.t.u.'s required to dry a ton of paper, it will be necessary to assign to each item the proper amount for that item and, on the other side of the ledger, enter up as a deduction any recovered heat which is actually being used to offset the items of requirements.

At a later meeting I hope to be able to assign definite values for the items enumerated above.

New TAPPI Members

William H. Anderson, chemical engineer, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.

Hammond J. Atkinson, chief chemist, Restigouche Company, Ltd., Campbellton, N. B.

Walter M. Bain, chief chemist, Crown Willamette Paper Company, Camas, Wash.

Maurice Brot, professor of pulp manufacture, Grenoble University, Grenoble, France.

J. Barcham Green, partner, J. Barchem Green & Son, Maidstone, Kent, England.

Laurence F. Barsaloux, chemist, Hudson Falls, N. Y.

John C. Cunningham, paper mill representative, B. F. Perkins & Son, Holyoke, Mass.

Carl B. Everitt, superintendent, Puget Sound Pulp and Timber Company, Everett, Wash.

Sakari Koivulehto, chemical engineer, Castanea Paper Company, Johnsonburg, Pa.

Aristide P. Micco, representative, Cartiere Burgo S/A, Verizualo, Italy.

Gustav Raabe, managing director, Hedemora Verkstader A/B, Hedemora, Sweden.

Dan M. Wadsworth, chief chemist, Operating Laboratory, Bogalusa Paper Company, Bogalusa, La.

R. C. Wooldridge, chemist, Bogalusa Paper Company, Bogalusa, La.

W. H. Monsson Joins Munising Paper Co.

MADISON, Wis., March 4, 1930.—W. H. Monsson, chemist on the pulp and paper staff at the U. S. Forest Products Laboratory, has joined the Munising Paper Company, Munising, Mich. Mr. Monsson, who is a graduate of the University of Illinois, accepted appointment to the Forest Products Laboratory staff in 1923. He received his M.S. degree from the University of Wisconsin in 1925. The major portion of his time has been spent on sulphite pulping research.

It is expected that in his new position Mr. Monsson will be concerned with both production and research.

A Study of Wood Deterioration*

By Francis J. Cirves[1]

I The Chemical Constitution of Wood

In the analysis of wood for its constituents extraction methods have been devised for increasing potency beginning with water at room temperature to highly concentrated acids such as 72 per cent sulfuric acid and pure chlorine gas. The necessity of such methods is because wood is made up of chemical compounds which begin with the simplest form as carbon dioxide absorbed from the air, and water, taken from the earth, to form other compounds of increasing complexity of carbon, hydrogen and oxygen until it reaches the end product known as lignin which is an undefined additive form of cellulose. The transition from the lower form to the higher is gradual so that the chemical natures differ only very slightly. However, microscopic views of wood sections reveal a cellular and fibrous structure, a segregation of the constituents into components which ultimately form the tree. A table of the chemical constituents of wood arranged in order according to formation and molecular complexity is shown herewith.

II The Constituents of Wood and Applications to the Extraction Methods Employed

FORMULA	CONSTITUENTS	EXTRACTION
CO_2 27.25% C	Carbon Dioxide	Cold Water
$C_6H_{12}O_6$	Monoses	Simple Sugar
40.0% C	Sucrose	½ Sucrose
$C_{12}H_{22}O_{11}$ 42.10% C	Reducing Sugars	½ Reducing Sugars
	Polysaccharides	Hot Water
$(C_6H_{10}O_5)X$	Starches	½ Reducing Sugars Few soluble polyoses
	Pecto- and Muco celluloses.... Cellulose plus Carbohydrates or Hemicelluloses	1% NaOH Pithy woods and woods easily peptized
$(C_6H_{10}O_5)N$ 43.85% C	Hemicelluloses ..... Adipo- and Cuto Celluloses .... Cellulose plus fatty and waxy compounds	10% KOH Hemicellulose and neighboring formations
N up to 35	Celluloses ..... (alpha) (beta) (gamma)	72% H_2SO_4 Celluloses
$C_{19}H_{28}O_9$	Ligno-Cellulose	
to $C_{28}H_{36}O_9$ 60.56% C	Lignin ..... (alpha) (beta)	Chlorine gas Lignins

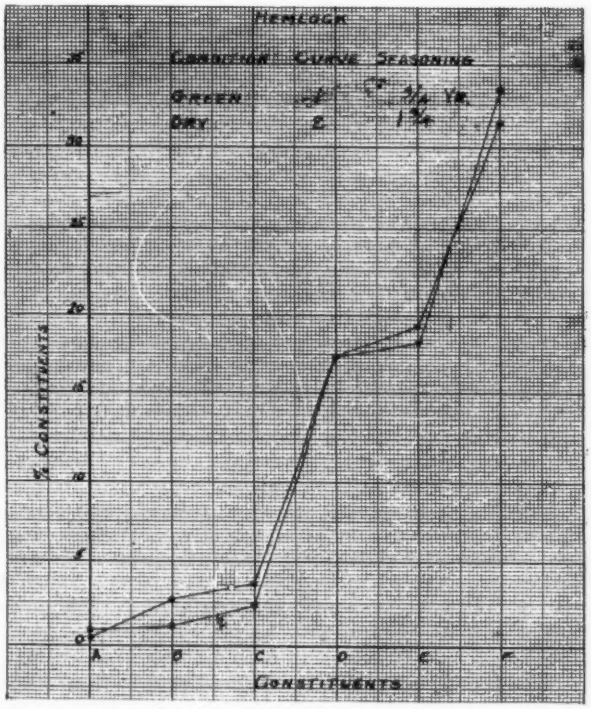
The first column shows the carbon content of each of the compounds that go to make up a tree. During the process of growth the empirical formulas become greater in carbon percentage and the structural formulas, some undetermined or only partially so.

The second column itemizes the principle constituents with minor classifications. There is no doubt that lignin is an involved product of cellulose of increasing weight, its formation apparently being governed by the requirements of the strength, size and nature of the tree. It is formed in greater proportion on the underside of the branches and nearer the base of the trunk.[2] It is more resistant to the elements and is last, under ordinary conditions, of the cellulose derivatives to decay as subsequent analysis show.

The third column shows the extraction methods employed in the various analyses and the constituents that are removed by each. A simpler classification of the analytical process is made and is employed in the present work.

Order	Analytical solvent	Constituents extracted
1	Cold water	Simple sugars
2	Hot water	Higher sugars
3	1 per cent NaOH	Pectocelluloses
3	10 per cent KOH	Hemicelluloses
5	72 per cent H_2SO_4	Cellulose
	Remainder	Lignin

It is to be remembered as the table of chemical composition of wood shows that each subsequent extraction is of a more potent nature and will react upon or remove those of the preceeding



GRAPH I.

analysis. Hence their differences would be the true or net value. Lignin is not attacked by 72 per cent sulphuric acid but it remains and is dried and weighed as such. Lignin can be extracted and removed from all other constituents by means of pure concentrated chlorine gas.

Extractions of the fatty, waxy and resinous compounds fall under a separate classification, being soluble only in the volatile solvents.

Constituents	Extraction
Fats	Ether
Waxes	Alcohol
Resins	Alcohol-Benzene

Of the wood formations in general, it is not known definitely whether many of the constituents are combined, mutually absorbed or admixed. There is no doubt however, that they are colloidal and of a high degree of complexity. The various components, if not chemically combined, are very intimately dispersed and associated with one another and in a very fine state of division.

The present scheme of analysis is that employed by the Forest Products Laboratory at Madison, Wisconsin, as outlined by Mark W. Bray.

III The Nature of the Analytical Investigation

In the preparation of pulp and manufacture of cellulose products derived from wood it is important to know the constituents of

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* Presented at annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 20, 1930.

[1] Research chemist, Mosinee Paper Mills Company, Mosinee, Wis.

the various woods and also the variation of the constituents with time of seasoning or aging. These factors have a direct bearing on the characteristics of the paper produced and moreover bring about conditions in the process of manufacture that must be governed to get the best results. It is important to know how long wood may be stored before any harmful effects set in. The present analysis is a basis from which these conclusions and others might be drawn.

In this report analyses have been made on six different kinds of wood, namely, hemlock, tamarack, jack pine, balsam, cedar and spruce. Also woods of the same kind and of different degrees of aging have been obtained and analyses made on them. All this data is summarized in Table I, the detail information of which is placed on separate analyses tables II to XII inclusive. In order to depict clearly the results of the entire analyses, Graphs I-VII inclusive, have been constructed and prove especially helpful in the discussion of the results.

IV Explanation of Data

The summary table has been arranged to make it as self explanatory as possible. However, a few additional remarks are necessary. Figures in columns 1, 2 & 3 are based on wood as received from the mill yard. The weights and percentages being based on sawed wood sections. Figures in columns 4 to 15 inclusive are based on oven dried samples of rasped wood fiber or screened sawdust.

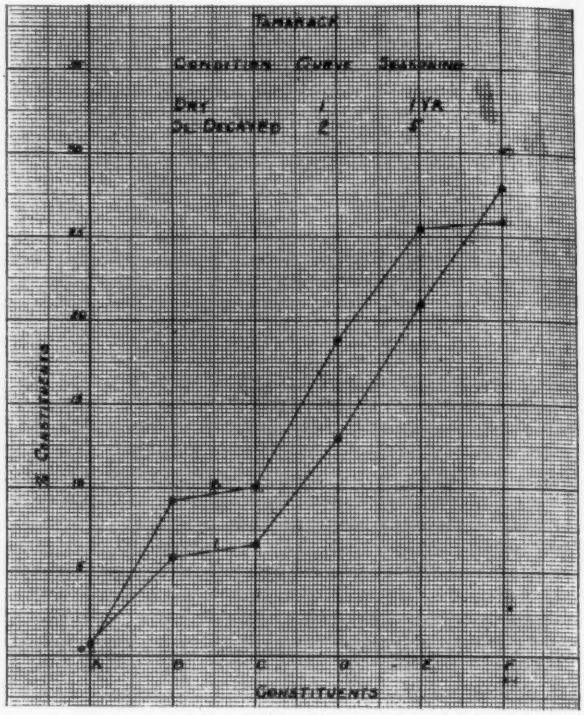
The key to the graph is as follows:

Letter	Constituent	Solvents
A	Fats	Ether
B	Simple sugars	Cold water
C	Higher sugars	Hot water
D	Pectocelluloses	1 per cent NaOH
E	Hemicelluloses	KOH solubility
F	Lignins	72 per cent H_2SO_4

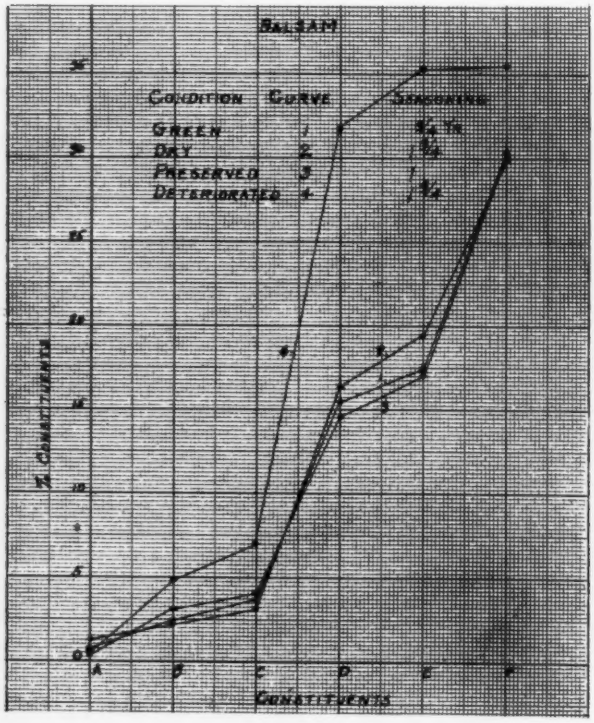
Explanation of Results

Graphs I to V show how the constituents vary with aging. With exception of Graph I for hemlock all of the woods, aged, increase in water and alkali solubilities. Also the green woods are higher in fats as would be expected. In every case, as may be seen in the net values of the summary table, aged woods are higher in alkali solubilities. Graph I for hemlock shows that the water solubilities are higher in the green woods. It is evident from the graph that the wood samples differ little from each other. Better examples are to be had in the following graphs.

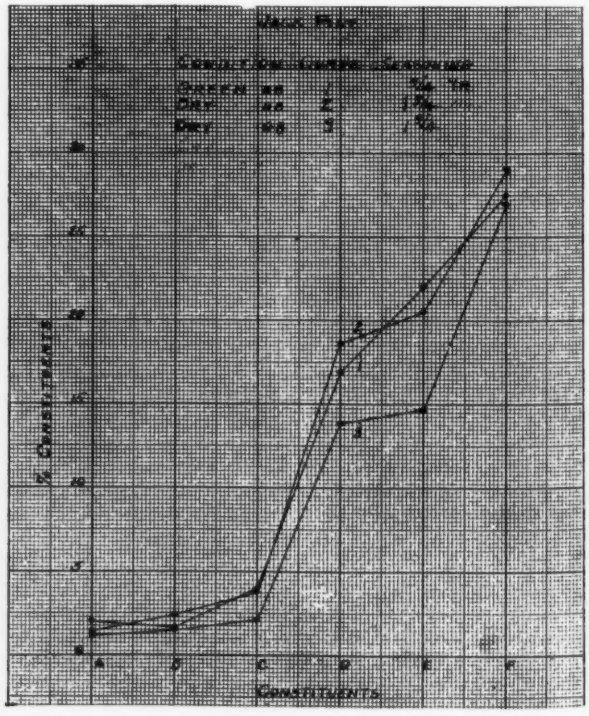
Graph II for balsam shows that the green wood, curve 1, has



Graph IV.



Graph II.



Graph III.

a higher fat content than the others of curves 2, 3 & 4. Curve 2 shows deterioration due to increase of D & E the alkali extractives. Curve 4 is for a decayed sample and shows clearly the increase of all factors. The per cent lignin is increased as before showing only a relative rather than an actual increase. Curve 3 falls below the green balsam curve 1, showing less deterioration even tho the time of exposure is equal to those of curve 3 and 4. Like curve 3 in graph III, it indicates that a wood is well preserved when it is stripped of its bark to permit drying. Actually the preserved woods show less decompostion than the green woods, curve 1, even though stored a longer time.

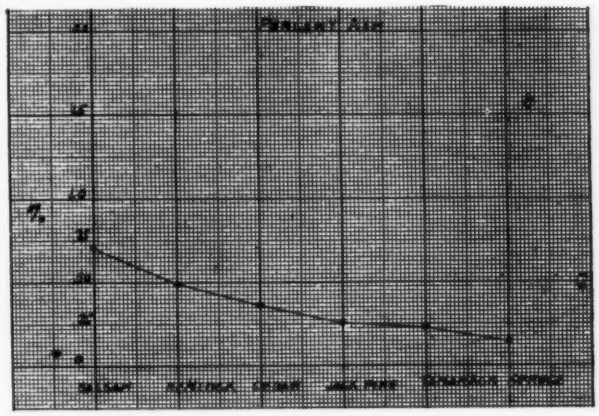
Graph IV on tamarack is similarly characterized but with a sudden drop in per cent of lignin. Upon examination it can be seen that the wood curve 2 is an example of estimated age of five years. Evidently the limit of endurance of the stability of lignin has been reached. Curves 1 & 2 are separated considerably due to greater deterioration. Similarly in graph II between curves 1 & 4 a wide divergence occurs due to deterioration but the time interval is only nine months compared to about 3 years for hemlock, graph IV. This brings out clearly how much more rapid balsam decays, although probably some allowance must be made because balsam was lying on the ground and subject to conditions much more conducive to decay.

Graph V, curves 1 & 2 show the relative analyses for preserved and well seasoned spruce and cedar of the same aging. Spruce shows lower values for all constituents.

Graph VI on ash content also shows that spruce is lowest in ash. Being lowest in all these values it should be highest in cellulose content, its purity also making it a particulary valuable wood.

Graph VII compares the analyses of all kinds of wood of about the same state of preservation and aging. Spruce is low in nearly all of the constituents and compares well with hemlock for water extractives. Tamarack is highest in simple and higher sugars, quite low in pectocelluloses and highest in hemicelluloses. Tamarack is also low in lignin, being second to spruce.

Jack pine and hemlock are high in pectocelluloses but hemlock drops low in hemicelluloses.

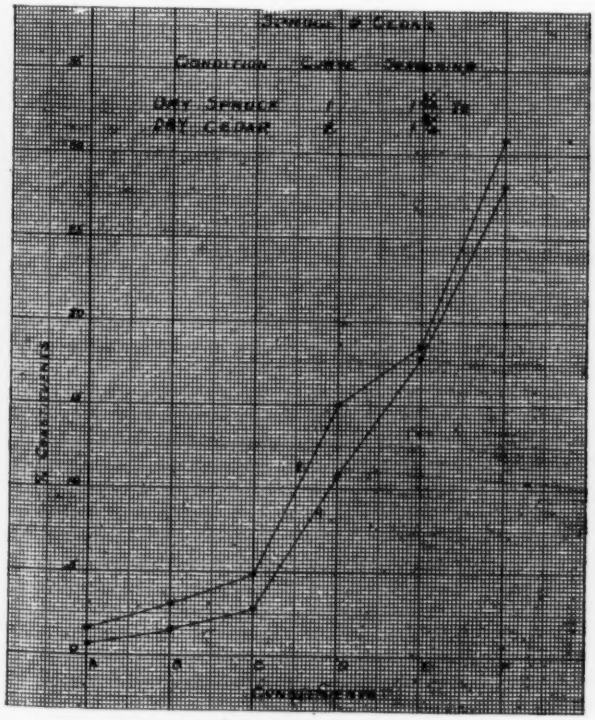


GRAPH VI.

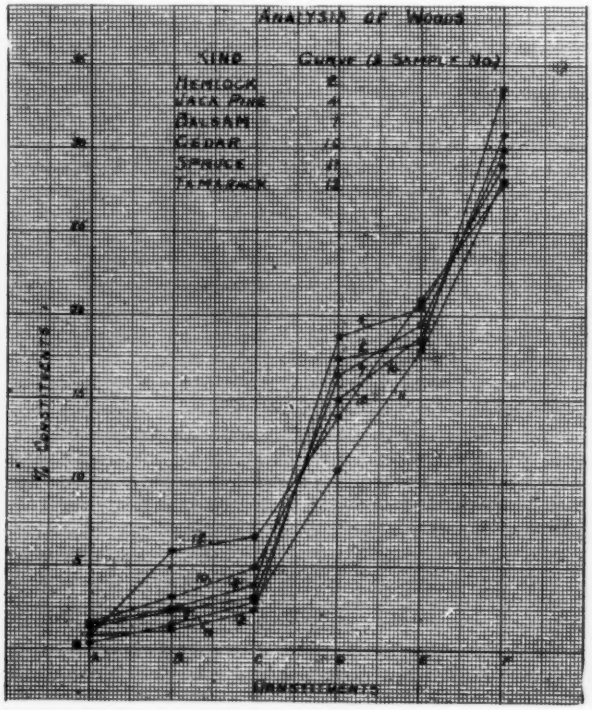
There is nothing unusual in the curve for balsam, except that it strikes about an average for all woods. The data on weights and specific gravities of woods show however, that balsam has the lowest oven dried weight. When it is green, however, it compares favorably with hemlock and is considerably heavier than jack pine. The summary table, also indicates that it contains the most moisture, except hemlock, which also hastens its deterioration.

Wood	Oven dry weight pounds per cubic foot	Specific gravity dry	Specific gravity wet
Spruce	24	.43	
Jack pine	24	.46	.57
Balsam	21	..	.71
Hemlock	23	.44	.78
Tamarack	31	.56	
Cedar	23	.32	
Source of information	Sutermeister	Schorger	Mosinee Paper Mills Laboratory

Another factor in the resistance of woods to deterioration is the



GRAPH V.



GRAPH VII.

ANALYSIS OF WOOD

Wood Data					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Kind	Condition	Date cut	Aging period	Sample number	Per cent moisture in wood, wet basis	Per cent moisture in wood, dry basis	Per cent wood	Per cent moisture in fiber, dry basis	Per cent ash	Per cent ether extract	Per cent cold water extract	Per cent hot water extract	Net hot water extract	1 per cent NaOH extract	Net 1 per cent NaOH ext.	10 per cent KOH extract	Net KOH extract	Net KOH solubles	Per cent lignin
Hemlock	Green	4-'29	¾ yr.	1	47.7	91.1	52.3	80.32	0.57	0.18	2.72	3.67	0.95	17.42	13.75	19.27	1.85	15.60	31.47
Hemlock	Dry	2-'28	1¾	2	43.1	75.6	56.9	66.26	.40	.73	1.20	2.36	1.16	17.45	15.09	18.37	.92	16.01	33.51
Jack Pine R. B.	Green	2-'29	¾	3	38.4	62.3	61.6	36.41	.27	5.01	1.62	3.92	2.30	16.92	13.00	22.05	5.13	18.13	27.57
Jack Pine R. B.	Dry	2-'28	1¾	4	21.5	27.3	78.5	20.65	.24	1.47	2.46	3.82	1.36	18.12	14.90	20.56	1.84	16.74	29.07
Jack Pine G. B.	Very dry	2-'28	1¾	5	16.4	19.7	83.6	17.59	.26	1.20	1.48	2.09	.61	13.80	11.71	14.69	.89	12.60	27.00
Balsam	Green	2-'29	¾	6	45.0	82.0	55.0	67.46	.70	.73	2.45	3.75	1.30	15.54	11.79	17.57	2.03	13.82	30.46
Balsam	Dry	2-'28	1¾	7	43.9	78.2	56.1	54.39	.53	1.25	2.34	3.17	.83	16.41	13.24	19.52	3.11	16.35	29.95
Balsam	Preserved	9-'28	1	8	25.0	33.4	75.0	35.78	.81	.46	3.16	4.05	1.09	14.62	10.57	17.08	2.46	13.03	30.36
Balsam	Decayed	2-'28	1¾	9	30.7	44.4	69.3	40.94	.75	.56	4.89	7.01	2.12	32.71	25.70	35.38	2.67	28.37	35.56
Cedar	Dry	2-'28	1¾	10	20.8	26.2	79.2	20.18	.37	1.56	3.17	4.93	1.76	14.93	10.00	18.55	3.62	13.62	30.87
Spruce	Preserved	2-'28	1¾	11	14.5	16.9	85.5	11.64	.15	.37	1.50	2.83	1.33	10.73	7.90	17.82	7.09	14.99	28.09
Tamarack	Dry	9-'28	1	12	23.7	31.0	76.3	13.04	.21	.65	5.90	6.71	.81	13.96	7.25	20.94	6.98	14.23	27.91
Tamarack (Ram Pike)	Slightly decayed	2-'29	5	13	18.7	22.9	81.3	18.41	.25	.51	9.33	10.03	.70	18.68	8.66	25.52	6.84	15.49	25.89
Calculation method (figures refer to column numbers)							100%–1						8–7		10–8		12–10	12–8	
Graph reference										A	B	C		D		E			F

fat, wax and resin content. Column 6 of the summary table shows that jack pine is highest in percent fat with 5.01 per cent. Cedar follows with 1.56 per cent which has a tendency to preserve it in spite of its low dry weight and porosity. The resin content is not included in the present data but will be obtained together with the cellulose content since it is a preliminary to the latter analysis. Green woods contain higher volatile solvent extractives and the cause for their reduction in aged woods is because they become oxidized and no longer soluble in ether, alcohol or benzene. In digesting for pulp there is also a reduction of the saponification or soapy products.

VI Summary of Results with Practical Applications

Although the extractives are increased in deteriorated woods, they are not necessarily identical to the constituents obtained in the preserved or the green woods. It is true that the decomposition more easily attacked by milder extraction methods. Some of the products formed are compounds of simpler structure becoming simpler compounds such as the starches and sugars become hydrated, take on water and decompose into carbon dioxide and methane. The higher forms humify to form what are known as humic acids. These acids are present to quite a large extent. Lignin humifies but cellulose does not. Deteriorated woods are high in acids and therefore would require to be neutralized when digested for pulping. This causes a loss of active alkali in the cook and as a result a rough or uncooked pulp is obtained and blowing difficulties are experienced. Blowing difficulties are pronounced whenever aged or deteriorated balsam is used. Graphs on balsam show the high alkali extraction values, indicating of its high acidic nature. The characteristics of pulp prepared from the usual mixture of wood is a harsh fiber which packs less, is generally loose as a mass permitting rapid drainage of liquor and passage of steam. These fibers are made up of an excess of uncooked hemlock and pine, the balsam having been quite easily attacked, the acid neutralized and a low percentage of the balsam left.

The low fat, wax and resin content in aged woods cause a decrease in the saponified products which reduces the soapy nature of the pulp and liquor. Difficulties in blowing are also caused by lack of lubrication. Black ash obtained from such a charge should be powdery and dry whereas in the case of green or fresh woods it will be lumpy and sticky. Experience has shown this to hold true every time.

Report of Alkaline Pulping Methods Committee*

By E. S. Hinman, Chairman[1]

The work accomplished by the Alkaline Pulping Committee during the year may be divided into two classes (1) research, (2) the collection of data through the use of questionnaires.

The research problem is being studied through the cooperation of the Forest Products Laboratory and deals with the "critical temperature" at which longleaf pine should be pulped to produce the maximum yields, consistent with pulp quality and good bleachability. This problem will, I hope, in the future include all the broad leafed woods now used in the soda process, and also the coniferous woods used in this same process. Reports of this work will be given at the sectional meeting of this Committee by staff members of the Forest Products Laboratory.

Of the 300 pulp mills in the United States to which the questionnaire on "Wood Measurement" was sent, 38 replied. These figures expressed as percentage replies amount to 12.7 per cent. It is difficult to formulate an opinion of the best and proper methods of handling wood from the pile or car to digestors, with 12.7 per cent of the available methods now in use.

The questionnaire on "Sulphidity" sent to all producers of sulphate pulp, with the idea of establishing a standard method of recording and figuring causticity, reduction, etc., was evidently received more favorably than the above mentioned questionnaire. Of the 34 sulphate mills, ten replied to this very important problem. These figures expressed as percentage replies, amounts to 29.4 per cent.

The replies to the two questionnaires mentioned above will be compiled and distributed to the contributors.

In order that any Committee may function properly and produce the maximum amount of work, it is important that each member of TAPPI cooperates to the fullest extent. This is not the case at present.

Through the suggestion of R. G. Macdonald the Alkaline Pulping Process Committee is endeavoring to work closely with the standing committee on Sulphate, Soda and Kraft Pulp, of the Technical Section of the Canadian Pulp & Paper Association, in order to eliminate duplication of effort so that the work of both committees will progress more rapidly.

To those who have cooperated with the Alkaline Pulping Process Committee during the year may we express our sincere appreciation.

* Presented at annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 18, 1930.

[1] Soda Mill Superintendent, P. H. Glatfelter Company, Spring Grove, Pa.

Chemical Microscopy in Paper Mill Laboratory*

By Kenneth P. Geohegan[1]

Many who are not acquainted with the methods of chemical microscopy seem to think that they require a large amount of time; and they picture a chemist that uses them as spending most of his days looking through the microscope. The truth is just the opposite. The methods of chemical microscopy are so rapid that a few minutes at the microscope often takes the place of an hour with test tubes and beakers. A chemist that uses these methods has more time to devote to other problems; he is able to make analyses for which he would be too busy otherwise.

There is no reason to distrust the methods of chemical microscopy. Many of the reactions used in microscopic analysis are the same as those used in the more familiar way of making qualitative analyses. Those that differ from the traditional methods have been chosen because they are more convenient, give quicker results, or furnish information that can not be obtained otherwise.

The methods of chemical microscopy are not so intricate as they may appear. One need not be an expert microscopist to take advantage of them, although experience and facility in the use of the microscope make them more valuable. Courses in chemical microscopy furnish the best and quickest way of acquiring proficiency in this field; but excellent books make the use of microscopic analysis possible to those who are unable to take a course in this subject.

Chemical Microscopy Literature

It is a satisfaction to be able to obtain books on chemical microscopy that are as carefully written as those by Dr. E. M. Chamot, Professor of Chemical Microscopy and Sanitary Chemistry at Cornell University. They give a thorough description of the principles of the microscope and of its applications to chemical investigations, including an explanation of its use in examining the optical properties of crystals and systematic directions for applying the qualitative tests. Even the second edition of 'Elementary Chemical Microscopy'[2] has been exhausted A new 'Handbook of Chemical Microscopy'[3], in two volumes, has been written by Dr. Chamot and Dr. C. W. Mason. Volume 1, which has just been published, includes the 'Principles and Use of Microscopes and Accessories, and Physical Methods for the Study of Chemical Problems." Volume II, which is in preparation, will give "Chemical Methods and Inorganic Qualitative Analysis." This book contains much material not included in "Elementary Chemical Microscopy" and is by far the best book on the subject. Every chemist should have it in his library. Books by Dr. H. Behrens give tests for some of the rarer elements[11] and for organic compounds[12]; but they are not so comprehensive nor so well suited for those who wish to study this subject.

The field of chemical microscopy is not limited to the observation of crystal forms; in fact, the variety of ways in which the microscope can be used for chemical investigations is amazing. It can be used for the determination of refractive indices, melting-points, subliming-points, the rotation of polarized light, the proportions of the constituents of powders, for qualitative analysis, for metallography, for the estimation of molecular weights, for the measurement of particle size, and for measurements of length, thickness, area, and volume.

The purpose of this paper is not to describe in detail the methods of chemical microscopy; but to give a general idea of the methods of microscopic qualitative analysis, and to illustrate these methods by describing their application to the identification of paper fillers.

The methods generally used in qualitative analytical microscopy depend on characteristic chemical reactions. They identify the elements in a manner that is similar to the usual qualitative analysis; but the reaction products are recognized by their form as well as by their color. The reactions are carried out in small drops on microscope slides, and the reaction products are examined under the microscope.

Often, it is possible to test for two or more elements with one reagent and to identify them simultaneously. Thus one of the most useful reagents, potassium mercuric thiocyanate, gives characteristic tests for zinc, copper, cadmium, cobalt, and iron, with the possibility of showing the presence of a number of other elements. Cesium chloride is used to test for antimony, tin, and bismuth. The saving of time is obvious. Further time is saved by using small amounts of materials. This allows evaporations, fusions, and even filtrations to be carried out in a fraction of the time required by the usual laboratory methods.

The chemist does not need to follow a rule of thumb procedure, but can select his tests according to his judgment, based on the kind of substance being examined. Each test that he makes gives him a basis on which to select the following test. If the substance is a solid, microscopic examination, perhaps in polarized light, allows him to judge whether it consists of one or of several materials. If it consists of more than one, he can select particles of each and test them separately. Thus he can identify, not only the elements, but the way in which they are combined.

The information obtained by qualitative reactions can be supplemented by an examination of the optical properties, which will furnish information that can not be obtained by the usual qualitative analysis. A good example, given by Dr. Chamot, is the differentiation between the three phosphates of sodium by means of their optical properties. It is possible to distinguish even between their various hydrates.

The methods used in examining the optical properties of crystals are similar to those used in petrography. The crystal system is determined from the crystal form, by reactions toward polarized light, and in some cases with the help of interference figures. The degree of double refraction is noted, either approximately or by measure, and the refractive index is determined by mounting the substance in liquids of known index of refraction. The results can be compared with tables[4,5,6,7] or with the properties of a sample of the substance that is suspected to be present. It is usually unnecessary to make all of these determinations, as one of them may suffice to distinguish between two compounds.

In other words, the elements can be identified by qualitative tests that are more rapid than those usually employed; and additional information can be gained by an examination of the optical properties. This procedure may appear complicated when stated indefinitely in a few words, as above; but carefully explained, as by Dr. Chamot, the procedure is remarkably simple and requires little time.

Paper Mill Laboratory Microscopes

The ordinary paper mill microscope can be used to recognize most of the reaction products of the qualitative tests, and also for the determination of the refractive indices of isometric crystals. The accurate determination of the refractive indices of doubly refracting crystals requires the use of polarized light; but most microscopes can be equipped with a polarizer and an analyzer at a small cost. This added equipment will be useful to the paper mill chemist in many ways; among others, in the examination of fiber structure[10].

A special microscope is required for examining more thoroughly the optical properties of crystals. Both the Spencer Lens Company and the Bausch and Lomb Optical Company make micro-

*Presented at annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 18, 1930.

[1]Member TAPPI, Chemist, Aetna Paper Company, Dayton, Ohio.

scopes designed by Dr. Chamot. These are especially adapted for use in chemical investigations and are a great improvement over those formerly supplied for this purpose.

The uses of the microscope in a paper mill laboratory are so numerous that it would be impossible to describe them. The examination of boiler-water, boiler-scale, boiler-sludge, the deposit that forms on the machine wires, pitch, dirt-specks, slime, mold, and the effect of the surface of paper on printing, are only a few of the ways in which the microscope is useful. The identification of paper fillers has been chosen for discussion; but it is hoped that emphasizing this application will not give the impression that the microscope is better suited to this purpose than to solving the many other paper mill problems.

The identification of paper fillers furnishes an excellent illustration of the advantages of microscopic analysis; it is a problem with which all paper mill chemists are familiar. It requires both optical tests and examination of the optical properties and it shows the remarkable saving of time that is characteristic of all microscopic analyses. Through the kind permission of Dr. Chamot, reference is made to the results of work done by the writer, with Dr. Chamot's assistance, in the Laboratory of Chemical Microscopy at Cornell University.

The method that is recommended by the Technical Association for the analysis of the mineral filler in paper[8] requires at least 0.2 grams of ash. This is extracted three times with dilute hydrochloric acid, and the extract is tested for aluminum, calcium, and sulphate. Effervescence when the acid is added shows the presence of carbonates. If there is an insoluble residue, it is dried and fused with sodium and potassium carbonates. The fused mass is disintegrated and extracted with hot water. The extract is tested for silica by evaporation with dilute hydrochloric acid and by treatment with dilute hydrochloric acid. It is then filtered and the filtrate is tested for sulphate. The portion that is insoluble in water is dissolved in dilute hydrochloric acid and tested for aluminum, barium, and magnesium.

The qualitative tests of microscopic analysis can be applied according to a similar procedure and will give the same results. This is more convenient than the foregoing method and also more rapid, but it is not recommended for the microscopic identification of paper fillers for reasons that will be given later. However, it may be of interest to describe a procedure of microscopic analysis of mineral fillers that follows the general plan of the standard method, in order to show the ways in which microscopic qualitative analysis resembles, and the ways in which it differs from the usual quantitative procedure.

Mineral Fillers

This procedure can be commenced by adding a small amount of the ash to a drop of dilute hydrochloric acid on a microscope slide, watching for the effervescence that would show the presence of carbonates. The slide is then heated over a microburner and allowed to cool. Calcium sulphate, if present, will separate as characteristic crystals. If no crystals of calcium sulphate appear, a test for calcium is made by adding a little sodium sulphate to a portion of the drop. If no calcium is present, another portion of the drop is tested for sulphates by adding a little calcium acetate or by allowing to flow into the drop a solution of barium chloride. To test for aluminum the remainder of the drop is neutralized with dilute ammonium hydroxide, acidified with a very little dilute sulphuric acid, and some solid cesium sulphate is added to form the characteristic crystals of cesium alum. If much calcium is present, it is best to decant the ammoniacal solution before dissolving the aluminum hydroxide with the sulphuric acid.

The fusion is performed in a small platinum cup or on a small piece of platinum foil; it requires only one or two minutes. A little water is added, warmed, and decanted from the insoluble portion. This extract is tested for silicates by placing a drop on a celluloid slide and adding ammonium fluoride, sodium chloride and sulphuric acid. Sodium silicofluoride separates as crystals that are easily recognized. Another portion of the extract is tested for sulphates by evaporating it to dryness with hydrochloric acid, adding a little hydrochloric acid, and allowing to flow into the resulting solution a drop of a solution of barium chloride.

Part of the water insoluble portion of the fused mass is heated with a drop of concentrated sulphuric acid on a microscope slide. Upon cooling, characteristic crystals of calcium sulphate or of barium sulphate will separate if either calcium or barium is present. If both are present, they can be recognized simultaneously, as the two sulphates form crystals of different shapes. The rest of the water-insoluble portion is dissolved in dilute hydrochloric acid and tested for aluminum as described above, and for magnesium by adding ammonium chloride, sodium phosphate, and ammonium hydroxide or sodium hydroxide. The crystals of ammonium magnesium phosphate are characteristic.

It has taken longer to describe the microscopic tests than to describe the usual qualitative analysis but the procedure when using the microscope requires less time. The fusion requires only one or two minutes; filtrations are unnecessary; evaporations to dryness and re-solution take only a fraction of a minute; and the ash from one gram of paper is more than enough. It is not necessary to burn three to ten times as much paper as that required to determine the percentage of ash.

It has been stated that the above microscopic method is not recommended for identifying paper fillers. Other microscopic methods are more rapid and give more information. Before considering one of these, let us examine critically the results obtained by both of the methods described above.

In both methods, tests are made for the following elements and radicals; carbonate, calcium, aluminum, sulphate, silicate, barium, and magnesium.

The interpretation of these results, as recommended by the Technical Association, can be summarized as follows:

In the acid-soluble portion of the ash: calcium and sulphate indicate $CaSO_4.2H_2O$ (crown filler), calcium and alkaline ash indicate $CaCO_3$ (whiting or chalk), barium and carbonate indicate $BaCO_3$ (barium carbonate).

In the acid-insoluble portion of the ash: barium and sulphate indicate $BaSO_4$ (blanc fixe or barytes), aluminum and silicate indicate aluminum silicate as china clay, magnesium and silicate indicate magnesium silicate from talc or asbestine.

"A microscopical examination of the ash assists in determining the variety of silicious minerals present."

It was necessary for the Technical Association, when selecting a standard method, to choose procedures familiar to all paper mill chemists; and it was necessary to describe this method so that it could not be misunderstood. Microscopic qualitative analysis is not generally familiar and it is difficult to describe accurately the appearance of mineral fillers under the microscope. Let us hope that before long, microscopic qualitative analysis will become as well known as microscopic fiber analysis; then it will be possible to include in the "Paper Testing Methods" a procedure for identifying paper-fillers that is more rapid and more comprehensive.

The methods that have been outlined do not permit distinction between the natural and the artificial minerals, such as barytes and blanc fixe, or calcite and precipitated chalk; nor between the different calcium sulphate fillers, of which there are four common types. Use of the microscope permits these distinctions and also removes the danger of confusing pyrophyllite talc with china clay; both are silicates of aluminum.

These distinctions are important, for the characteristics of the natural fillers are different from the properties of the precipitated products. Pyrophyllite has the characteristics of talc and not of china-clay.

The following method is rapid and serves to identify all of the common fillers.

A little of the ash is placed in a small drop of water on a microscope slide, distributed thoroughly in the drop, and exam-

med under the microscope. Polarized light is not essential, but it is a great help. This examination will identify talc, asbestine, agalite, china clay, silica, or diatomaceous earth; and it will distinguish between natural and precipitated fillers. It also will give a clue to the identity of fillers other than the silicates, and will show the presence of an unusual filler.

It is fortunate that the silicates, which are difficult to analyze, can be recognized easily by their appearance. The particles of talc are large and more or less fibrous, depending on the variety. The most fibrous talcs are asbestine and agalite. Between crossed nicols, most of the particles of talc show weak double refraction; the fibrous particles and particles of dolomite are strongly birefringent.

Most of the particles of china clay are small. Of the larger particles, the flaky, irregular grains of kaolinite are characteristic. The particles of English clays are more uniform in size than those of American clays, and a greater proportion are sufficiently large that their shape can be seen at a magnification of 100 diameters. The proportion of particles that show a marked double refraction is greater in English clays.

Grains of silica (quartz) have low indices of refraction, weak birefringence, and conchoidal fracture. The particles of diatomaceous earth are unmistakable.

The particles of natural fillers are irregular and not uniform in size; the particles of precipitated fillers are more regular, more uniform, and usually much finer. Particles of barium carbonate, magnesium carbonate, calcium cabonate, and anhydrous calcium sulphate show very strong birefringence; those of barium sulphate and of hydrated calcium sulphate show weak birefringence.

After examining the filler as described, a little iodic acid is added to the drop and allowed to dissolve. Effervescence shows the presence of carbonates. If calcium is present, either as the carbonate or as the sulphate, calcium iodate separates as elongated octahedra having symmetrical extinction and strong double refraction[8]. If barium carbonate is present, barium iodate separates in bunches of prismatic needles that are often curved. They, too, have strong double refraction, but an extinction angle of about 30 degrees. It may be necessary to start crystallization by scratching the slide with a glass rod, as the iodates of calcium and barium tend to form supersaturated solutions.

Magnesium can be detected by adding to the same drop ammonium chloride, sodium phosphate, and ammonium hydroxide or sodium hydroxide. This test, which has been mentioned before, is usually successful when applied to the drop after testing with iodic acid, and without further treatment; but it is safer to evaporate twice with hydrochloric acid, and to dissolve the residue in very dilute hydrochloric acid before making the test.

If the ash contains barium sulphate, its presence will not be shown by the test with iodic acid. Another small portion of the ash is added to a drop of sulphuric acid on a microscope slide, and the slide is heated over a micro-burner until the sulphuric acid becomes concentrated and gives off fumes. Upon cooling, barium sulphate will separate in characteristic crystals. At the same time, any calcium that is present will crystallize as the sulphate, but the crystals are quite different from those of barium sulphate.

This procedure, which can be followed in five minutes, permits recognition of all of the paper fillers identified by the standard method, and of silica and diatomaceous earth; it also distinguishes between the natural and the artificial fillers.

Heat changes the form of calcium sulphate; therefore, to distinguish between the different calcium sulphate fillers, it is necessary to obtain some of the filler without burning the paper. This can be done by disintegrating the paper in water, removing the fibers by pouring through a sieve, and allowing the filler to settle; or it can be done more quickly by teasing apart a small piece of the paper in a drop of water, on a microscope slide, and then removing the fibers by means of the teasing needles.

Crown filler ($CaSO_4.2H_20$) consists of crystals in the form of prisms with truncated ends; these are frequently twinned to form the characteristic "arrowhead" crystals. The crystals have low indices of refraction, weak birefringence, and an extinction angle of 37 degrees. Natural gypsum has similar optical properties, but can be distinguished by its irregular, broken grains. Pearl filler (partly dehydrated calcium sulphate) retains some of the form of the original crystals, but the particles show that they have been partly disintegrated by heat. The birefringence is strong, and the index of refraction is much higher than that of hydrated calcium sulphate. The fourth variety of calcium sulphate that is in general use as a paper filler, is made, as I undertand, by heating the natural gypsum to an extremely high temperature. It consists of tiny crystals having very strong birefringence and high indices of refraction.

If it is desired, the results obtained by this method can be confirmed by other microscopic qualitative tests, by refractive index determinations, or by a careful examination of the optical properties of the filler.

In describing the microscopic methods of analysis, I have intentionally omitted the details of procedure and descriptions of the reaction products, as an attempt to crowd them into a limited space might make them misleading. The references should be consulted for complete information regarding these tests.

I wish to close with a bit of personal testimony. I spent a year at Cornell University in order to study the methods of chemical microscopy under Dr. Chamot. Even before I finished the courses, people that believe only in traditional methods predicted that I would find these methods impracticable. You can imagine that I was anxious to see whether they would prove to be a real help.

My work at The Aetna Paper Company has been essentially practical. We have no opportunity to indulge in fine spun theories nor time-consuming methods. The conditions have been ideal for testing the value of the methods of chemical microscopy. When a problem arises, I turn immediately to the microscopic methods because I have found that they give more rapidly and more certainly the information for which I am seeking. They have permitted analyses for which there would have been no time otherwise; and they have furnished information that could not have been obtained by qualitative analysis alone.

Many who wish to use microscopic analytical methods may be deterred from doing so because they feel, when they are trying to solve a problem, that they dare not trust the results of methods with which they are not familiar, and that they have not the time to become familiar with microscopic methods. I suggest that they first read the "Handbook of Chemical Microscopy." The methods and applications will be a revelation. Then, I suggest that they try one or two tests at a time to check the results of the analyses that they make according to their usual methods. It will not be long before they will feel confidence in the microscopic methods and in their ability to use them. The time that these methods will save will more than repay them for their efforts.

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[2]Elementary Chemical Microscopy.—Chamot. John Wiley & Sons, Inc., New York. 1st Edition, 1916. 2nd Edition, 1921.

[3]Handbook of Chemical Microscopy.—Chamot and Mason. John Wiley & Sons, Inc., New York. Volume I, 1930. Volume II in preparation.

[4]Elements of Optical Mineralogy.—Winchell. John Wiley & Sons, Inc., New York. Part I, 1922. Part II, 1927.

[5]The Optic and Microscopic Characters of Artificial Minerals.—Winchell. University of Wisconsin. 1927.

[6]Essentials for the Determination of Rock-Forming Minerals.—Johannsen. University of Chicago Press. 1922.

[7]Tables for the Identification of the Inorganic Salts.—Fry. U. S. Department of Agriculture, Bulletin 1108.

[8]Paper Testing Methods of the Technical Association of the Pulp and Paper Industry. Pages 107 and 108. Lockwood Trade Journal Co., New York. 1928.

[9]Iodic Acid as a Microchemical Reagent for Combinations of Soluble and Insoluble Compounds of Calcium, Strontium, and Barium.—Deniges. Chem. Abs. 14 (1929), 2596. Comt. Rend. 170 (1920), 996-998.

[10]Anleitung zur Mikrochemischen Analyse der Wichstigsten Organischen Verbindungen. Zweites Heft. (Der Wichstigaten Faserstoffe.)—Behrens. Voss, Leipzig. 1896.

[11]Mikrochemische Analyse. Behrens-Kley. Leopold Voss, Leipzing. 1921.

[12]Organische Mikrochemische Analyse.—Behrens-Kley. Leopold Voss, Leipzig. 1922.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts and Bibliography of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

For additional information regarding these abstracts subscribers should address the chairman of the Abstracts Committee, Dr. Clarence J. West, National Research Council, 21st and B Streets, Washington, D. C.

Machinery

Drive for Paper Machine Dryers. J. W. Vedder assignor to Rice, Barton & Fales. U. S. pat. 1,670,832, May 22, 1928.—Instead of driving the rolls in series in the same order as that in which the paper passes over them, each gear meshing directly with the gears on the journals of adjacent driers, the gears are made smaller than the diameter of the rolls and idler gears are provided to drive the upper bank of rolls in series and also the lower bank in series, the two banks being driven separtely. Power is transmitted from one of the upper to one of the lower driers. In this way each gear receives power on one side of its shaft and transmits power from a diametrically opposite point around its circumference, and they are small enough that they do not prevent access to the bearings for lubrication and repairs. The gearing is protected by means of a casing which is built up in sections and assembled in such a manner that any section can readily be taken out to permit easy access to any gear or gears requiring to be repaired or replaced.—A. P.-C.

Multiply Paper. G. L. Bidwell assignor to Warren Manufacturing Company. U. S. pat. 1,682,826, Sept. 4, 1928.—Several wet paper webs are successively picked up on a pick-up felt and the latter with the superposed webs upon its under side is passed through a suction press in contact with a bottom wet felt.—A.P.-C.

Drying of Paper. M. J. Argy, Cliff Paper Co. Paper Mill 51, No. 42, 9, 14 (Oct. 20, 1928).—Considerable reduction in the work which has to be done by the driers can be effected by preheating the sheet to about 80 to 85° F, no advantage being secured from higher temperature. The preheating rolls can conveniently be installed between the first and second presses, giving a sheet approximately 38 to 40% dry after the second press. With this arrangement little or no water is removed at the third press, and the latter can best be run without a felt and used as a smoothing press. Installation of a radio moisture control apparatus on a 40 year old machine allowed of obtaining a uniform content of 8% moisture in the paper (the best that could previously be obtained was 6% and this was by means constant), and a better sheet was produced.—A. P.-C.

Method of Threading Paper Through the Driers of the Paper Machine. R. V. Weldon assignor to Great Northern Paper Company. U. S. pat. 1,676,305, July 10, 1928.—The paper web is guided into the carrier ropes of the drying rolls by directing the web to move toward the ropes and mainly at one side thereof, and deflecting the web in front of the ropes laterally toward the ropes by a blast of air directed into the web in front of the ropes at an angle to the path of movement thereof.—A. P.-C.

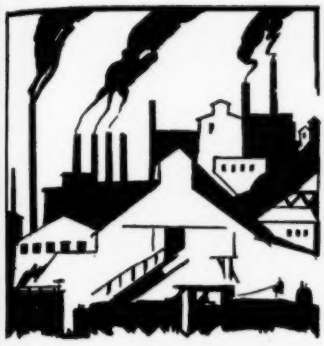
Method of Drying Paper. M. J. O'Malley. U. S. pat. 1,669,774, May 15, 1928. The drying cylinders are heating with hot air instead of steam, which is claimed to have the following advantages: (1) more rapid heating, enabling the machine to be started up more rapidly; (2) simpler and considerably cheaper apparatus, since the rolls can be made of comparatively thin sheet copper and steam pipe fittings are eliminated; (3) greater safety owing to the elimination of pressure in the driers. A suitable drying system is described in which heated air is circulated through the dried rolls and then passes back through the heater. Each roll is provided with a hollow pipe passing along its axis and provided with a solid partition at the center. Heated air is introduced at one end and delivered in close proximity to the inner surface of the shell, and the cooled air is withdrawn through perforations in the second half of the central pipe.—A. P.-C.

Vacuum Dryer Seal. O. Minton. U. S. pat. 1,683,254, Sept. 4, 1927.—The paper inlet or outlet opening of the vacuum chamber consists of three horizontal rolls; two of them have their axes in the same horizontal plane, and each of them forms a tight joint with the chamber by means of a fluid seal extending across the full length of each roll. The third roll is mounted parallel to and below the first two, and is pressed against them.—A. P.-C.

Automatic Steam Control and Differential for Paper Machines. C. Stickle. U. S. pat. 1,674,845, June 26, 1928.—A valve is provided between the steam headers of the two sections of driers which automatically maintains a differential of pressure between the two sections and makes a positive flow of steam through the main section. By means of this device, there is no steam blowing through and no cold water or spray required to consume steam in order to maintain a vacuum. While a vacuum pump is employed, the exhaust in the pump is piped to the steam header so that there is no loss from operating the vacuum pump. This permits of a positive vacuum of 10 to 15 inches without the use of any cooling water, thereby giving perfectly drained driers at a minimum cost.—A. P.-C.

Temperature and Dryness Controller for Electrically Heated Paper Driers. S. A. Staege assignor to Westinghouse Electric and Manufacturing Company. U. S. pat. 1,671,493, May 29, 1928. The electric heating elements used for drying the paper are divided into two groups, each of which is provided with a suitable circuit breaker. A thermostatic element is provided in close proximity to the web as it leaves the drier and controls the circuit breaker of one of the groups of heating elements, so that when the temperature in the drier casing rises above a fixed predetermined point (resulting in overdrying of the paper) the circuit breaker of one of the groups of heating elements is opened and remains open until the temperature inside the casing has fallen to the proper value. When this point is again reached, the circuit is automatically closed.—A. P.-C.

Electrically Heated Paper Drier Control System. S. A. Staege assignor to Westinghouse Electric and Manufacturing Co. U. S. pat. 1,664,229, Mar. 27, 1928. In order to avoid throwing the full load of the heater on or off the circuit when the drier is started or stopped when a break occurs in the paper, the heating elements are divided into several groups. The invention provided a motor operated contact drum, controlled by a drag link, for effecting a step by step energization and de-energization of the heating units, and limit switches are provided to de-energize the motor at the desired limit of travel of the contact drum. An auxiliary contact drum is provided, controlled through the drag link by a thermostatic element in the dryer casing, to effect a step by step energization and de-energization of a portion only of the heating elements to maintain a substantially uniform temperature in the system as long as the web is not passing through the drier.—A. P.-C.



SECTION OF THE
COST ASSOCIATION OF THE PAPER INDUSTRY
Affiliated with
THE AMERICAN PAPER AND PULP ASSOCIATION
Edited by Thos. J. Burke C.A. Sec.-Treas.

The Three Ways to Cut Costs*

By H. M. Harman[1]

Anybody of normal intelligence can find places in any business where things can be done a little better than they are being done. This condition is, in fact, general throughout life. If you keep your eyes open and your mind alert, you discover ways to cut corners and do things a little better than the average.

Yielding to this inclination is a serious weakness. No, I am not going to take the familiar line that by doing things a little better you will increase profits for your company, solidify your own position, and eventually climb to the top like a hero of the Horatio Alger books we used to read when I was a boy. In fact, I believe that if you go around making little improvements here and saving an odd per cent there, you will end up about where the average office manager or department head ends up—as office manager—or as manager of some other department—with little likelihood of promotion. And you will have earned exactly what you got, for while you were going around saving nickels you were losing for the company the very substantial savings that you could have been accumulating for it.

Stopping the Leaks vs. Bailing Out the Boat

Three ways are open to reduce expenses. Let me enumerate them in the reverse order of their desirability, but in the order that they are commonly thought of:

1—Making betterments in the existing method.

2—Substituting an entirely different operation.

3—Eliminating the operation.

Why do we feel that plan number 1, bettering the existing method, is least desirable of the lot? A good many reasons might be cited—will be cited, no doubt, by the time this article has reached its end. For the moment, let us look at one reason.

No matter what the status of any operation, it can always be examined and time-studied and otherwise gone after for improvement in its detail. Even when a whole operation has been eliminated, which means a 100 per cent saving on its cost, there remains something for the management to improve. When a new, economical operation has been substituted for an old and comparatively inefficient operation, the new operation is still open to betterment by the detailed method of attack. But when the management starts out by subjecting a method to scrutiny for its possible petty economies instead of for a possible elimination or substitution, it is trying to bail out the boat instead of stopping the leaks.

Take as an example a purely fictitious instance. Suppose we have a problem of printing price-change sheets daily for a given department, inserting these in envelopes, and mailing them to the sales offices throughout the United States. The first method of saving is to subject to detailed study the motions of the girls who fold the sheets and insert them, to study whether a slightly smaller size of paper cannot be used, to strive to have the price information in the hands of the printing department an hour earlier every day. This may easily result in an aggregate saving of 15 per cent on the whole job.

Shall We Save 50 Per Cent or 100 Per Cent?

If we look at the problem for chances to substitute something entirely different, we may discover that the information might go out just as well on a postcard as on printed sheets. Perhaps we see also that by typing it up on a duplicator master at the last moment we can get the information into the sales offices in exactly as usable shape. Thus, by approach number 2, we have reduced costs about 50 per cent, through eliminating printing and the inserting jobs and substituting for them a duplicator job on a government postcard.

Deeper consideration might, however, have shown that this whole idea of bulletining price changes daily is needless. Perhaps the same information is flowing through some other channel, or else the information may not be needed daily. In this event, by method number 3, we have saved 100 per cent of the cost by eliminating the whole operation. And if we have gone through the other two stages before we reach this conclusion we have spent a lot of time and energy in fruitless activities. We should have been better off by recognizing from the start that the operation is useless and therefore eliminate it with no further ado. Thus we should have had a deal of time meanwhile in which to save money in other fields.

It is always possible to make the first type of saving a comparatively minor betterment. But the same time or effort applied to the same problem with the different approach will usually result in eliminating the operation altogether or else substituting a wholly different operation at a major saving in expense.

Here is an actual instance, from the experience of the Bureau of Methods at Schenectady in handling a problem of a works in a distant city. A complicated stock report used to come from this plant to another department. It was a monthly report, and so complex that it required about 10 days to complete after the first of each month. The first improvement was to discover that it would serve quite as well if made every six months instead of every month. Still it presented a real problem of expense and delay. Finally a plan was devised by which the facts were kept on tabulating cards; this made it possible to turn out the report in two days instead of 10 days, and cut the clerical time cost to 20 per cent of the old method. But eventually one of our Methods men went over the report column by column with a man from the works where the report originated and a man from the sales

* System, Sept., 1929, issue.
[1] Manager, Bureau of Methods, General Electric Co.

department where it was received. They decided that the whole report could be discarded, and it was done away with accordingly. If the subject had been as minutely studied when it first came up for consideration some years before, the savings to the company would have been considerably larger by now.

Then, too, there was the job involved when our sales offices placed orders on our various factories. It meant a good deal of work to transfer the customer's order to a standard requisition form, making 11 copies. The first change was adopting fanfold feeds, which meant a considerable saving on an 11-copy job. But last December, after a world of sparring about, we came to the conclusion that approximately 80 per cent of all our orders could be adequately handled with three copies.

The routine was changed accordingly. For this 80 per cent, we make three copies instead of 11 copies. The clerical saving is considerable. What of the copies that we saved? Six departments were receiving them, a total of 5,000 sheets of paper per week per department. These copies were needless because four departments do not need the information and the other two get it in summarized report form. Besides the saving in the cost of making these copies, we are saved the cost of handling them through the mailing departments. And in each of those six departments they have a weekly burden of clerical work less by 5,000 sheets that previously were looked at and filed and talked about. They have nothing to do about them any longer, because the copies are not made. And the departments are running more smoothly because they are no longer receiving such a burden of material that they simply did not need.

Elimination or Substitution Works Almost Every Time

Nowadays this thing of eliminating an operation altogether or else substituting a wholly different and more economical method for the old operation is standard with us. About 98 per cent of our problems yield either to the method of elimination or the method of substitution. Rarely indeed do we resort to the plan of trying to make minor improvements in an individual technique. It simply does not pay us to, when so many large savings are waiting to be taken advantage of.

We had used standard billing machines for billing even though our account distribution was too complicated to take advantage of these most excellent machines. We changed over, comparatively recently to a flexible system by which requisitions are typed with fanfold typewriters. The original is typed with a hektograph ribbon, one copy made with hektograph carbon paper, and one copy with record carbon paper for file. If the requisition is issued against a works, the hektograph carbon copy is used for duplicating extra copies, as required. Should the requisition go to a warehouse this hektograph carbon copy is used as a master for preparing tags, labels, and shipping receipts. Original copies, after shipment, are completed by the insertion, with hektograph ribbon, of the date of shipment, route, etc., and become the masters from which the customers' invoice and internal copies are duplicated. The saving has been substantial.

Saving money on clerical routine operations affords an enormous opportunity for increased profits in most companies today. The big savings are to be made through eliminating needless operations and substituting better operations for old. Yet office managers as a class, faced by demands from executives that clerical costs be reduced, are putting their attention on the minutiae of office management instead of broader phases of efficiency.

Everywhere today one hears talk about the increased interest of the executive heads in office management. The reason, of course, is that with close margins of profit and good stiff competition, the heads of the businesses are turning to this as an unworked source of savings. The office manager has today the greatest opportunity in his lifetime for making a showing that will benefit the company that employs him, for doing it in a way that must focus the attention of his superior officers on his department and the importance of it, and consequently for improving his own situation materially.

One Clerk Saved Pays for Many Pencils

Yet what is he doing? In general he is trying to work out some method for reducing the company's expenditures for pencils or carbon paper or for cutting the number of personal telephone calls by clerks. These activities no doubt yield savings sufficient to pay his salary and leave a little profit for the company. But if he were to study the operations on which the pencils are used, he would probably learn that 20 per cent of them are needless—thereby not only reducing his pencil bill 20 per cent but also cutting his office payroll perhaps 10 per cent. He would discover, on looking into the subject of carbon paper, that many of the carbon copies being made are needless, and that many of the papers that are being made with carbon copies are also needless; he could pare a sizable share of his office expense along this very line. As for telephone calls, studying the operations involving the use of telephones would in many instances disclose that defective routines were making it necessary for clerks to use the telephone to complete the documents, correct errors, and all this sort of thing. Amending the methods would make many telephone calls unnecessary, and save the time devoted to making these calls, which many times include personal as well as company business.

In other words, when the office manager takes hold of a problem in expense saving, let him be sure he is taking hold of it by the end that will yield the largest savings. Too often we all incline to investigate the small end because it is most obvious.

In working for eliminations and substitutions, we have found that the greatest word in our vocabulary is, "Why?" And strangely enough, one of the greatest assets that our Bureau of Methods brings to its job is a considerable ignorance of the detailed clerical routine in the company, but it has instead a thorough knowledge of the principles of office management and the most efficient manner of performing clerical operations.

Why We Keep Ourselves Free from Details

About some activities such as transcribing and other service departments, the application of machinery to office work, various activities of this sort, we know a good deal because certain men in our bureau are detailed to constant study along these lines as specialties. But in the bulk of clerical routine of the company, we try to keep ourselves free from details until we have to delve deeply into them.

Here is an instance of the way this works out. Just the other day the head of a department came into my office to discuss whether a given job in his department could be put on tabulating cards. He brought the subject up; I had not known the job existed. They tabulate, in his department, data on the operation in service of a given line of product. They would require, it developed, a tabulating card with nearly 200 columns to handle this information on the machines.

Because I had not known the job existed, I kept asking questions. Mostly they were whys: "Why do you need 260 classes? Why do they originate there?" You see, I was trying to inform myself so that I might be of some assistance to his department.

Before we got through, we had given up discussing the question of using tabulating machines. It developed that the reason he needed 260 classes was that the report form used in the field made this necessary. The report form was imperfect, he and I decided when he had sent over to his department for a copy. Re-framed, it could make the whole tabulation job exceedingly simple. In its simplified form, it would yield more useful information than the old. And since it would be so simple, it could easily be handled by hand instead of on a machine. As usually happens, our department made no direct contribution to the solution of this problem. By the time we had finished asking all the basic questions required to enlighten our ignorance of the detailed problem, his answers had caused him to work out for himself an improved method—really

a substitute for the old operation. That's how it works when you give methods two and three a chance.

Another Example

Or take another example, a price card file that gave us trouble over a period of 18 months. In consultation with the departments most directly affected, our men spent hours and hours discussing methods of keeping up the card file so that the information would be up to date. Finally one of our men thought to inquire into the origins of the file, which was maintained in all of our branches sales officers as well as in the home office sales departments. Before the investigation had gone far along these lines, it became apparent that the card file could be done away with because it was a duplication of information available elsewhere in far more accessible and convenient form. Once the people who used the file were shown how to get at the facts in the other place, the difficulty was solved by eliminating the job.

The fact is, you can almost always eliminate an operation or else substitute a far better operation at materially less cost. The instance that requires attention to its minutiae has not come up in our work since we discovered this truth. It is so much more profitable all around to concentrate on the more economical approaches.

So now, in conclusion, let us list once more the three ways to cut costs. This time, however, we shall quote them in their proper order of desirability:

1—Eliminating the operation.
2—Substituting an entirely different operation.
3—Making betterments in the existing method.

The department head who concentrates first on numbers 1 and 2 of this listing will not find himself wasting much time on number 3. And thereby he will profit both his employer and himself.

Phases of Budgetary Control*

By Frank S. Hecox

There is perhaps no subject of more vital interest to management than ways and means of controlling operations. One of the most effective means of controlling operations is by the use of a budget system—a statement of future accounts. The accounts record what has happened in the past; the budget shows what we expect will happen in the future. The responsibility for the preparation and operation of the budget is delegated to individuals and the budget should be prepared that they can be held accountable for actual results.

The purpose of the budget is to maintain control over the following factors that are present in every business; regulation of cost of sales; regulation of expenses; investment and turnover in inventories; expenditures for plant additions and plant changes, and the regulation of finances. A budget forecasts sales, production, buying, expenditures, financing, profit and financial position.

Organization for Preparation of Budget

Before installing a budget the organization must be thoroughly in favor of the idea of budgetary control. In many cases it is better to start in a small way than with a complete budget. A company can start with a cash budget, and as the organization sees the advantages and results to be obtained the plan can be gradually increased until it is extended to all phases of the business. There must be a proper organization for budget control and administration. Probably the most satisfactory results are obtained through a budget committee composed of the functional heads. The comptroller or other accounting officer should be a member of this committee. In the preparation of a budget the first step is to classify the various functions and fix the responsibility for the preparation of forecasts. It is the duty of the person in charge of the budget to see that all forecasts are made and assembled and that the completed budget is prepared well in advance of the budget period. The person in charge of the preparation should furnish department heads with information relative to past performance. The expense accounts should be properly classified into the natural functions of manufacturing, selling and administration so that responsibility may be properly fixed. The budget period may vary in time from a few months to a year. However, it should be long enough to include a complete cycle from the purchase of the raw materials to the sale of the finished product.

The Master Budget

The master budget is composed of the following schedules, which will be discussed in the order named: sales forecast, production and purchase forecast, expense forecast, plant-addition and plant-change budget, cash budget, other-income and other-deductions forecast, and the estimated balance-sheet and profit-and-loss statement.

The responsibility for the sales forecast rests on the executive in charge of the sales. In preparing this forecast the sales for the previous year should be studied, any marked trend noted, an analysis made of the existing market and all desirable or undesirable factors taken into consideration. In the case of a concern doing a national business the salesmen in the field present their forecasts to the territorial sales managers. The territorial sales managers revise the salesmen's forecasts to what they believe can be reasonably expected and forward them to the sales manager, who likewise amends the forecasts in light of additional data that he may have. The forecast submitted should show the number of units expected to be sold each month of the fiscal year. It is first prepared in quantities, to show the expected sales by months for the whole period, and later summarized, showing total sales values.

The responsibility for the production and purchase forecast rests on the executive in charge of manufacturing. The production schedule is based on the sales forecast, taking into consideration the desired ending inventories and the beginning inventories. This is summarized by units, by lines, by months. It is the function of the purchasing department to buy the raw materials and have them available when needed for production. It is the function of the cost department to estimate the direct labor for the production schedule. In the last few years many manufacturers have installed standard costs and now use predetermined rates for materials, labor and manufacturing expense. The standard costs established are the budget costs.

The expense forecast represents all expenditures in a manufacturing concern other than direct materials and direct labor. In the case of a retail or wholesale concern it represents all expense except merchandise purchased for sale. The departmental forecasts are prepared by the various department heads, covering the items for which they are responsible. The expense forecast should be divided into the manufacturing, selling and administrative sections. Expenses under these main divisons are further divided into fixed expense and variable expense. In the manufacturing-expense section among the absolutely fixed items are such expenses as superintendence, depreciation, taxes, insurance, etc., which may be referred to as 100 per cent fixed, since they will be the same whether the production is 50,000 units or 100,000 units. Among the 100 per cent variable items are expenses such as inspection, material handling and manufacturing supplies that vary according to the production. Between the classes 100 per cent fixed and 100 per cent variable there are expense items which are partly variable, such as light, heat, power, salaries, etc. A practical method of arriving at the degree of variation of these partly variable expenses, according to volume, is to use a percentage calculated on past experience.

Plant-addition and plant-change budget provides for purchase of

* The Journal of Accountancy, Sept., 1929, issue.

new buildings or equipment and for any extraordinary repairs that may be needed for carrying out the production forecasts. The puchasing of new buildings or equipment is analyzed from the viewpoint of the profit return on the added investment and consideration is given to the conversion of current assets into fixed assets.

The cash budget is usually divided into two sections. The cash-receipts section shows the estimated cash receipts for the budget period. In most concerns this is composed of the collection of sight drafts, accounts and notes receivable. There should be estimated the expected collection of each month's billings based on past experience. The cash-disbursements section shows the expected accounts payable, notes payable, payrolls, manufacturing, selling and administrative expenses.

The other-income and other-deductions forecast includes non-operating income and expenses such as interest, dividends, federal income tax and any extraordinary incomes or expenses. Using the above forecasts there can be compiled an estimated balance-sheet and profit-and-loss statement as of the end of the budget period.

Operation of the Budget

The budget should be flexible, and a monthly revision should be made, eliminating the first month and adding a new month. Flexibility is essential in order that advantage may be taken of any favorable or unfavorable condition that may develop. The budget is practicable only to the extent to which it is applied to the control of operations and expenditures. It is a standard with which actual results are measured. It should be the chart that governs the course of the business. The department heads receive copies of their departmental budgets and the general manager receives copies of all budgets. Monthly comparison should be made between the actual results and the budget, and the causes of variation should be analyzed.

The Benefits

Budgetary control plans responsibility, coordinates individual departments, regulates expense according to income, maintains proper inventory control consistent with the volume of sales and is a yardstick with which to measure actual accomplishment. It acts as a safety signal in pointing out unfavorable trends.

The professional accountant can render a distinct service by convincing business executives of the benefits to be derived from controlling operations by the use of the budget. The professional accountant is best qualified by training and experience to analyze and interpret the facts with reference to past results and to render sound advice in the preparation and supervision of the budget. In far too many instances business men are awaiting the post mortem at the close of the year to determine the reasons why profits did not come up to expectations, or even the reasons why the year's operations resulted in a loss. There is no excuse for this condition of affairs when day-by-day operations can be visualized and regulated by intelligent budgetary control.

Pycnograph Improved

Further new improvements are announced in the Hays Pycnograph. This is a rugged, sensitive and simple specific gravity recorder which during the past ten years has greatly increased factory efficiency and eliminated hundreds of thousands of dollars in waste paper mills throughout America.

New improvements include parts designed to even further resist corrosion and which may be more easily removed for cleaning without throwing the working mechanism out of adjustment.

These new improvements aid a more accurate recording to density in paper mill operations, not only in measuring quantity but in controlling processes and the amount of material used.

The operating principle of the Pycnograph in furnishing a continuous record of the specific gravity of liquids is essentially that of taking a continuous unit volume sample of the liquid and of recording weights of this definite volume upon a suitably placed chart. This is accomplished by causing a small stream of liquid to flow into a properly balanced glass bulb, completely filling the bulb and then returning to the system at a lower point.

The accompanying photograph (Fig. 1) shows the working of the apparatus in its fundamental form. The solution flows into the glass weighing bulb and then overflowing through the top outlet to the main system at a lower point. The large glass globular receptacle is held firmly in place by an aluminum yoke which is pivoted immediately under the funnel-like bulb being

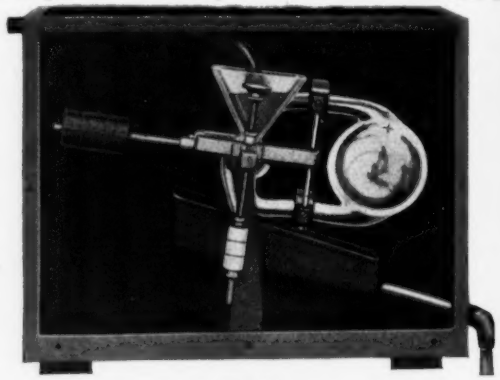


FIG. 1.

free to swing in steel pivot bearings. The weight of the yoke and bulb is counterbalanced by the adjustable weight seen at the extreme left of the picture.

The glass bulb is so designed that both the inlet point at the top and the outlet point at the right of the bulb, are in practically the same vertical plane as the pivot points, thus eliminating any force due to impact or outlet velocity.

The flow through the bulb is such that there is sufficient swirling motion in the bulb proper to give a continuous fresh sample to be weighed, and therefore any change in gravity is quickly apparent.

The record of this gravity is obtained by means of a pen arm

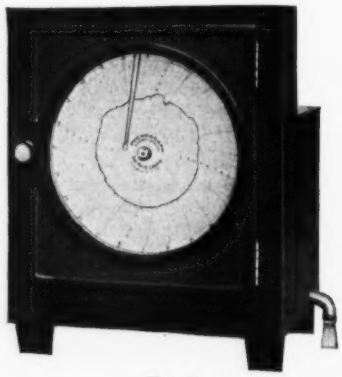
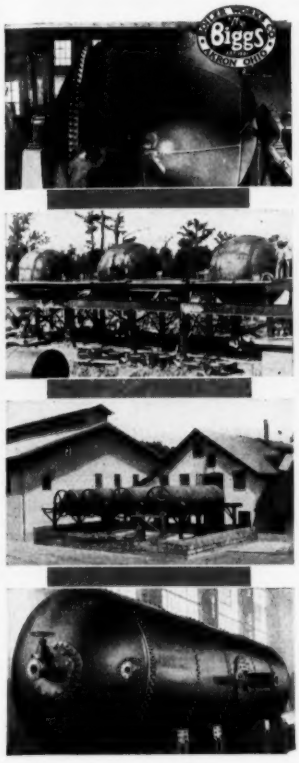


FIG. 2.

attached to the yoke and marking upon a revolving dial placed (see Fig. 2) above the unbalanced parts.

Fig. 2 clearly shows the relation of the parts to each other and their installation in an enclosed case, the balance chamber being in the rear. This chamber can be lead lined or of stainless steel or of monel, copper, etc., so that in the case of corrosive liquids the weighing parts are segregated from the recording parts. The clock recorder is in the front as shown.

Organization of the Columbia Paper Company, Inc., with offices and plant at 1136 South Lafayette boulevard, South Bend, Ind., has been announced by its president, Roy H. Olinger. The company will carry complete lines of paper, cordage, school supplies. Other officers of the company are E. F. Jessup, vice president, and C. A. Ackerman, secretary and treasurer.



Top—Biggs Welded Rotary Digester
Second—Biggs Riveted Rotary Digesters
Third—Biggs Standard Cylinder Rotary Bleaching Boilers
Bottom—Biggs Tumbling Digester

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Welded or Riveted Steel Plate Construction of Every Description

Write for our folder, "Unusual Steel Plate Construction"

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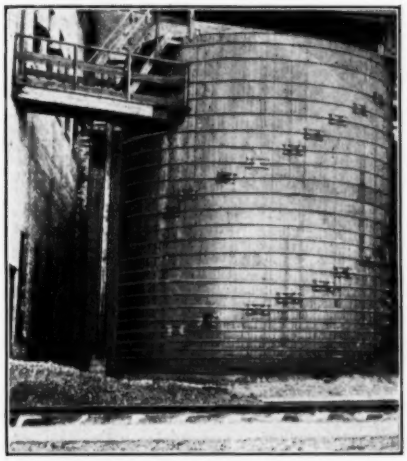
TANKS THAT LAST



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Kalamazoo tanks are made of best obtainable tank woods, built right, guaranteed tight.

Sixty years experience building Blow Pits, Acid Tanks, Stuff Chests, Agitators, etc., for the Paper Trade.

Ask about our new Tile Tanks for stock or bleach.

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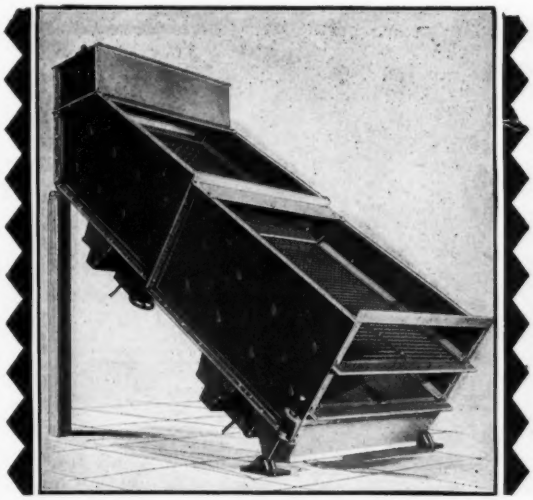

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Small floor space required!
Low power consumption!
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No lubrication!
No destructive shaking of supports or buildings!
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These are the features which make the Wood Chip Hum-mer a profitable investment for pulp and paper mills!

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The W. S. Tyler Company
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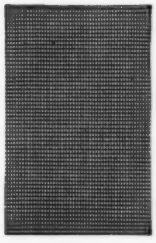

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WIRES

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MARCH 1, 1930

SUMMARY

Cigarette paper .....177 cs.
Wall paper .....60 bls., 25 cs.
Paper hangings .....118 bls., 19 cs.
News print .....1019 rolls
Printing paper .....84 rolls, 192 cs.
Wrapping paper .....54 rolls, 33 bls.
Packing paper .....3 cs.
Blue print paper .....1 cs.
Tissue paper .....25 cs.
Filter paper .....35 bls., 5 cs.
Drawing paper .....34 cs.
Colored paper .....27 cs.
Baryta coated paper .....31 cs.
Metal coated paper .....10 cs.
Coated paper .....30 cs.
Surface coated paper .....26 cs.
Photo paper .....3 cs.
Writing paper .....1 cs.
Decalcomania paper .....43 cs.
Silk paper .....9 cs.
Caoutchouc paper .....8 cs.
Wafer paper .....11 cs.
Paste board .....66 cs.
Card board .....73 cs.
Miscellaneous paper .....11 bls., 186 cs.

CIGARETTE PAPER

De Manduit Paper Corp., McKeesport, Havre, 54 cs.
British American Tobacco Co., Aquitania Southampton, 11 cs.
Standard Products Corp., De Grasse, Havre, 49 cs.
Liggett & Myers Tobacco Co., De Grasse, Havre, 63 cs.

WALL PAPER

W. H. S. Lloyd & Co., N. Amsterdam, Rotterdam, 12 cs., 3 bls.
F. A. Binder, Berlin, Bremen, 6 bls.
Globe Shipping Co., Berlin, Bremen, 4 bls.
Irving Trust Co., Hamburg, Hamburg, 4 cs.
F. J. Emmerich, Hamburg, Hamburg, 39 bls., 2 cs.
W. H. S. Lloyd & Co., American Farmer, London, 5 bls., 1 cs.
F. J. Emerich, Alaunia, Southampton, 1 ble.
R. F. Downing & Co., Aquitania, Southampton, 2 cs.
Thomas & Pierson, Aquitania, Southampton, 2 cs.
F. J. Emmerich, Andania, Liverpool, 2 bls.
Titan Shipping Co., De Grasse, Havre, 2 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., American Farmer, London, 70 bls., 17 cs.
Whiting & Patterson Co., Inc., Aquitania, Southampton, 8 bls., 2 cs.
A. C. Dodman, Jr., Inc., Andania, Liverpool, 40 bls.

NEWS PRINT

Parsons & Whittemore, Inc., Berlin, Bremen, 99 rolls.
Parsons & Whittemore, Inc., Berlin, Bremen, Bremen, 159 rolls.
Parsons & Whittemore, Inc., Sagauche, Kotka, 280 rolls.
Perkins, Goodwin & Co., Hamburg, Hamburg, 481 rolls.

PRINTING PAPER

Kennedy & Co., N. Amsterdam, Rotterdam, 3 cs.
E. Dietzgen & Co., N. Amsterdam, Rotterdam, 42 cs.
International F'd'g. Co., N. Amsterdam, Rotterdam, 26 cs.
F. C. Strype, N. Amsterdam, Rotterdam, 48 cs.
Martin & Bechtold, Berlin, Bremen, 38 cs.
Keuffel & Esser Co., Pr. Roosevelt, Bremen, 84 rolls, 11 cs.
Japan Paper Co., Alaunia, Southampton, 10 cs.
Japan Paper Co., Aquitania, Southampton, 1 cs.
W. A. Foster & Co., Aquitania, Southampton, 6 cs.
Oxford University Press, Andania, Liverpool, 7 cs.

WRAPPING PAPER

C. Steiner, N. Amsterdam, Rotterdam, 33 bls.
——, Hamburg, Hamburg, 42 rolls.
Arkell Safety Bag Co., Malaren, Gothenburg, 12 rolls.

PACKING PAPER

K. Pauli Corp., N. Amsterdam, Rotterdam, 3 cs.

BLUE PRINT PAPER

J. Henchel Co., Pr. Roosevelt, Bremen, 1 cs.

TISSUE PAPER

G. W. Sheldon & Co., American Farmer, London, 3 cs.
W. J. Byrnes, Alaunia, Southampton, 3 cs.
F. B. Vandergrift & Co., Andania, Liverpool, 10 cs.
D. C. Andrews & Co., Andania, Liverpool, 3 cs.
B. F. Drakenfeld & Co., Andania, Liverpool, 6 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Farmer, London, 5 cs.
A. Giese & Son, Aquitania, Southampton, 35 bls.

DRAWING PAPER

Keuffel & Esser Co., Pr. Roosevelt, Bremen, 31 cs.
H. Reeve Angel & Co., Inc., Aquitania, Southampton, 3 cs.

COLORED PAPER

S. Gilbert, Berlin, Bremen, 18 cs.
J. Wanamaker, Berlin, Bremen, 9 cs.

BARYTA COATED PAPER

J. H. Schroeder Banking Corp., Berlin, Bremen, 31 cs.

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F. C. Gerlach, Berlin, Bremen, 10 cs.

COATED PAPER

Pacific National Bank, Hamburg, Hamburg, 30 cs.

SURFACE COATED PAPER

Gevaert Co. of America, Mercier, Antwerp, 26 cs.

PHOTO PAPER

J. J. Gavin, Aquitania, Southampton, 3 cs.

WRITING PAPER

Globe Shipping Co., Aquitania, Southampton, 1 cs.

DECALCOMANIA PAPER

L. A. Consmiller, Berlin, Bremen, 6 cs.
C. W. Sellers, Berlin, Bremen, 2 cs.
B. F. Drakenfeld & Co., Andania, Liverpool, 35 cs. (duplex).

SILK PAPER

Whiting & Patterson Co., Inc., N. Amsterdam, Rotterdam, 9 cs.

CAOUTCHOUC PAPER

American Express Co., Hamburg, Hamburg, 8 cs.

WAFER PAPER

W. L. Haas, N. Amsterdam, Rotterdam, 11 cs.

PASTE BOARD

Premier Floug Co., Berlin, Bremen, 66 cs.

CARD BOARD

R. Wilson Paper Corp., N. Amsterdam, Rotterdam, 73 cs.

MISCELLANEOUS PAPER

Japan Paper Co., N. Amsterdam, Rotterdam, 9 cs.
Keuffel & Esser Co., N. Amsterdam, Rotterdam, 24 cs.
Steiner Paper Co., N. Amsterdam, Rotterdam, 31 cs.
Globe Shipping Co., N. Amsterdam, Rotterdam, 18 cs.
F. C. Teipel, Hamburg, Hamburg, 6 bls.
Japan Paper Co., De Grasse, Havre, 28 cs.
Coenca Morrison Co., De Grasse, Havre, 12 cs.
Standard Products Corp., De Grasse, Havre, 71 cs.
Keller Dorian Paper Co., De Grasse, Havre, 15 cs.
F. J. Emmerich, De Grasse, Havre, 5 bls.

RAGS, BAGGING, ETC.

International Germanic Trust Co., Hinnoy Valencia, 45 bls. rags.
Irving Trust Co., Hinnoy, Barcelona, 44 bls. rags.
Chase National Bank, Hinnoy, Barcelona, 75 bls. jute card waste.
——, Hinnoy, Barcelona, 72 bls. rags.
E. J. Keller Co., Inc., Hinnoy, ——, 89 bls. rags.
Chemical Bank & Trust Co., N. Amsterdam, Rotterdam, 54 bls. bagging.
Van Oppen & Co., N. Amsterdam, Rotterdam, 188 bls. bagging.
Chase National Bank, Berlin, Bremen, 48 bls. rags.
S. Birkenstein & Son, Exanthia, Alexandria, 297 bls. rags.
Darmstadt, Scott & Courtney, Exanthia, Alexandria, 132 bls. rags.
P. Berlowitz, Exanthia, Alexandria, 83 bls. rags.
Brown Bros. & Co., Exarch, Bari, 125 bls. rags.
Banco Com'l. Italiane Trust Co., Exarch, Genoa, 104 bls. bagging; 128 bls. rags.
Banco Com'l. Italiane Trust Co., Cabo Mayor, Naples, 283 bls. rags.
V. Galaup, McKeesport, Havre, 289 bls. rags.
E. J. Keller Co., Inc., McKeesport, Havre, 45 bls. rags.
International Germanic Trust Co., Pr. Roosevelt, Bremen, 43 bls. rags.
Roval Manfg. Co., Mercier, Antwerp, 36 bls. thread waste.
Banco Com'l. Italiane Trust Co., Exton, Catania, 80 bls. rags.
Jaffe Products Co., Siboney, Havana, 21 bls. rags.
M. Snedeker Corp., Andania, Liverpool, 87 bls. paper stock.
Castle & Overton, Inc., Sud Cubano, B. Ayres, 309 bls. rags.
B. D. Kaplan, Aquitania, Southampton, 26 bls. rags.

OLD ROPE

W. Steck & Co., N. Amsterdam, Rotterdam, 73 coils.
Chemical Bank & Trust Co., N. Amsterdam, Rotterdam, 49 coils.
Irving Trust Co., Berlin, Bremen, 67 coils.
International Germanic Trust Co., Hamburg, Hamburg, 76 coils.
Brown Bros. & Co., Cabo Mayor, Huelva, 283 rolls, 71 bls.
International Purchasing Co., Exton, Genoa, 134 coils.
Brown Bros. & Co., Exeter City, Bristol, 55 coils.

CASEIN

Champion Coated Paper Co., Strabo, B. Ayres, 1935 bags.
T. M. Duche & Sons., Strabo, B. Ayres, 834 bags.
T. B. Duche & Sons, Western World, B. Ayres, 834 bags.
Casein Manfg. Co., Western World, B. Ayres, 1045 bags.
A. Hurst & Co., Western World, B. Ayres, 250 bags.
Kalbfleisch Corp., Western World, B. Ayres, 334 bags.
Atterbury Bros., Inc., Western World, B. Ayres, 834 bags.
McKeesport, Havre, 400 bags.

WOOD PULP

Atterbury Bros., Inc., United States, Oslo, 750 bls. wood pulp, 150 tons.
M. Gottesman & Co., Inc., Carlsholm, Iggessund, 850 bls. sulphite.

(Continued on page 78)

Pulp Mill Knives for
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Hogs
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Beaters
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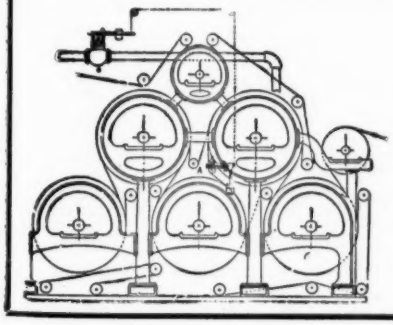

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W. F. PICKLES **Buckland, Conn.**

Imports of Paper and Paper Stock

(Continued from page 76)

Bulkley, Dunton & Co., Irene, ———, 7075 bls. sulphate, 1437 tons.
Bulkley, Dunton & Co., Sagauche, ———, 4875 bls. wood pulp, 990 tons.
Pagel, Horton & Co., Inc., Sagauche, Gefle, 1750 bls. wood pulp, 304 tons.
E. M. Sergeant & Co., Sagauche, Gothenburg, 748 bls. dry soda pulp.
Johanson, Wales & Sparre, Inc., Malaren, Gothenburg, 250 bls. sulphate.
Price & Pierce, Ltd., Malaren, Gothenburg, 1125 bls. wood pulp.

WOOD FLOUR

State Chemical Co., N. Amsterdam, Rotterdam, 1000 bags.
A. Klipstein & Co., N. Amsterdam, Rotterdam, 300 bags.

BALTIMORE IMPORTS

WEEK ENDING MARCH 1, 1930

M. Gottesman & Co., Inc., Carlsholm, Iggesund, 3000 bls. sulphite; 500 bls. sulphate.
Johanson, Wales & Sparre, Inc., Carlsholm, Gothenburg, 1500 bls. sulphate.
J. Andersen & Co., Carlsholm, Gothenburg, 220 bls. wood pulp.
Bulkley, Dunton & Co., Carlsholm, ———, 14750 bls. wood pulp.
Price & Pierce, Ltd., Sagauche, Gothenburg, 2101 bls. wood pulp.
The Borregaard Co., Inc., Sagauche, Gothenburg, 49 rolls paper.
Perkins, Goodwin & Co., Sagauche, Gothenburg, 1016 bls. kraft pulp; 1778 bls. sulphite.
E. M. Sergeant & Co., Sagauche, Gothenburg, 800 bls. sulphite; 1196 bls. dry soda pulp.
Parsons & Whittemore, Inc., Sagauche, Gothenburg, 2710 bls. wood pulp; 750 bls. sulphate; 150 bls. sulphite.
———, Sagauche, Kotka, 6647 bls. sulphite.
Brown Bros. & Co., Sagauche, Gefle, 2150 bls. wood pulp, 218 tons.
Price & Pierce, Ltd., Sagauche, Stockholm, 4480 bls. sulphite, 568 tons.
National City Bank, Exhibitor, Piraeus, 428 bls. rags.

BOSTON IMPORTS

WEEK ENDING MARCH 1, 1930

Bulkley, Dunton & Co., Irene, ———, 4125 bls. wood pulp.
Hollingsworth & Vose Co., Dakotian, Manchester, 54 bls. bagging.
Baring Bros. & Co., Dakotian, Manchester, 648 bags hide cuttings; 26 bls. rags; 369 bls. new cuttings.
International Purchasing Co., Dakotian, Manchester; 38 bls. bagging.
Brown Bros. & Co., Dakotian, Liverpool, 72 bls., 72 coils old rope.
Baring Bros. & Co., Dakotian, Liverpool, 134 coils old rope.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 1, 1930

Tradesmans National Bank, Hinnoy, Barcelona, 106 bls. rags.
Int'l. Germanic Trust Co., Hinnoy, Barcelona, 212 bls. rags.
Phila. National Bank, Hinnoy, Barcelona, 170 bls. rags.
E. J. Keller Co., Inc., Hinnoy, ———, 76 bls. rags.
Brown Bros. & Co., Exarch, Bari, 113 bls. rags.
Fidelity Trust Co., Exarch, Bari, 24 bls. rags.
V. Galaup, Exarch, Leghorn, 91 bls. rags.
Brown Bros. & Co., Exarch, Leghorn, 157 bls. glue stock.
F. Weber & Co., Exarch, Genoa, 2 cs. paper.
S. Birkenstein & Son, Exarch, Marseilles, 47 rolls old manila rope.
Bank of New York, McKeesport, Dunkirk, 43 bls. rags.
Darmstadt, Scott & Courtney, McKeesport, Dunkirk, 57 bls. rags.
J. M. Hagy Waste Works, McKeesport, Dunkirk, 106 bls. rags.
H. Feldman, McKeesport, Dunkirk, 72 bls. rags.
J. A. Steer & Co., McKeesport, Dunkirk, 196 bls. rags.
D. I. Murphy, McKeesport, Dunkirk, 125 bls. rags.
G. Mathes & Co., McKeesport, Dunkirk, 124 bls. rags.
Katzenstein & Keene, Inc., McKeesport, Dunkirk, 251 bls. rags, 24 bls. bagging.
W. Heisley, McKeesport, Dunkirk, 53 bls. rags.
E. J. Keller Co., Inc., McKeesport, ———, 51 bls. rags.
Castle & Overton, Inc., McKeesport, Havre, 80 bls. rags.
P. Berlowitz, McKeesport, Havre, 78 bls. rags.
D. I. Murphy, McKeesport, Havre, 10 bls. rags.
H. Feldman, McKeesport, Havre, 36 bls. rags.
V. Galaup, McKeesport, Havre, 59 bls. rags.
Belgam Corp., McKeesport, Havre, 135 bls. rags.
A. Hurst & Co., McKeesport, Havre, 41 bls. rags.
Katzenstein & Keene, Inc., McKeesport, Havre, 155 bls. rags.
Phila. National Bank, Exton, Leghorn, 29 bls. rags.
Guaranty Trust Co., Exton, Leghorn, 310 bls. rags.
Grace National Bank, Exton, Naples, 101 bls. rags.
C. B. Richard & Co., Exeter City, Bristol, 81 bls rags.
J. A. Steer & Co., Exeter City, Bristol, 82 coils old rope.
Old Colony Trust Co., Exeter City, Bristol, 86 coils old rope.
Brown Bros. & Co., Sagauche, Gefle, 525 bls. wood pulp, 53 tons.
Lagerloef Trading Co., Sagauche, Helsingfors, 320 bls. sulphite, 54 tons.
Wilkinson Bros. & Co., Inc., Sagauche, Gothenburg, 35 rolls paper.
J. Andersen & Co., Sagauche, Gothenburg, 250 bls. sulphite pulp; 250 bls. wood pulp.
The Borregaard Co., Inc., Sagauche, Gothenburg, 21 bls. 15 rolls paper.
Parsons & Whittemore, Inc., Sagauche, Gothenburg; 609 bls. wood pulp.
Castle & Overton, Inc., Exhibitor, Constantinople, 100 bls. rags.
———, Exhibitor, Algiers, 55 bls. rags.
Irving Trust Co., Dakotian, Manchester, 39 bls. new cuttings.
F. Weber & Co., Dakotian, Liverpool, 2 cs. drawing paper.

Indianapolis Demand Improves

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., March 3, 1930.—Some little improvement has been noted in demand for various grades of paper here, but the improvement has not been nearly so marked as the trade wanted or expected. Most of the improvement has come in the demand for common grades, including wrapping paper. Spring sales have increased demand for these grades to some extent and a general slight improvement in most lines of retail business have accounted for the remainder. However, the trade is expecting little real encouragement until later in the spring. Weather conditions during the past week have given indications of the approach of the spring season and doubtless have influenced demand to some extent.

Demand for the better grades of book papers and similar coated grades has been about the same as during the past fortnight. There has been some increase in demand for news print from the rural papers, particularly. The city papers are using about the same quantity they did last year and incidently are complaining of business.

Building paper demand has not improved as much as was expected, but there is a fair volume of inquiries and some good weather will stimulate business. Demand from the paper box and carton manufacturers of the state is reported very good with an increasing production which gives every indication of increasing also.

Lime Rock Paper Mill Nearly Ready

Dard Hunter and Harry Beach, of Dard Hunter, Inc., Lime Rock, Conn., are in New York this week for the purpose of meeting Robert P. Robertson and his son, who were due to arrive from England aboard the White Star liner *Baltic* yesterday, Wednesday. Mr. Robertson and his son are expert paper makers from Whatman's celebrated mill at Maidstone, Kent, and have been acquired by Dard Hunter to supervise operations at the Lime Rock hand-made paper mill, which is nearly in shape to operate.

Wood Pulp Importers Merge

It is announced that the firms of Atterbury & McKelvey and Atterbury Bros., Inc., wood pulp importers, have been merged and their business will in future be carried on in the name of Atterbury Bros., Inc., who have been appointed sole agents for A. S. Tofte Cellulosefabrik, Oslo, Norway. J. A. McKelvey has been elected a director and Johannes Westergaard a vice president of Atterbury Bros., Inc. The headquarters of the new corporation are located at 110 East 42nd street, New York.

Price & Pierce to Sell International Kraft

The International Paper Company has appointed Price & Pierce, of 17 East 42nd street, New York, sole selling agents in North and South America for their southern kraft paper production, which is reported to be approximately 750 tons per day. The southern kraft mills of the International are located at Camden, Ark.; Mobile, Ala.; Moss Point, Miss., and Bastrop, La.

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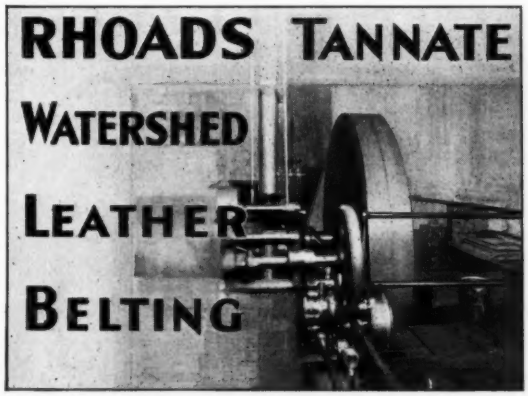

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Tannate has at least 25% greater pulling power than the "very best" oak-tanned belts. Tannate's grip on the pulleys is conspicuous. Tannate is *made water-proof*, and will carry nearly the same load *under water* as in normal conditions.

On a wide range of drives Tannate, though more expensive initially, will prove a wise investment in that it transmits the maximum power at low belt tension, and on hard drives frequently outwears oak belts several times.

For difficult drives, like this one—Tannate is particularly profitable.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, March 5, 1930.

The local paper market was moderately active during the past week. While most of the standard grades were in seasonal demand, some sections of the industry were rather quiet. Now that the spring campaign is under way, more lively trading is anticipated in the near future. Prices are generally holding to previously quoted levels.

Conditions in the news print industry are practically unchanged. According to the News Print Service Bureau, the total weighted average production in the United States and Canada was 72 per cent of capacity in the week ending February 15. Stocks at the mills are below normal. No further developments have been reported in the price situation.

Competition in the paper board market is still over keen and while quotations are officially unchanged there have been persistent reports of under cutting. Demand for the various grades of fine paper is satisfactory and prices are holding to schedule. Despite over-production the coarse paper is in a fairly sound position.

Mechanical Pulp

Steadiness prevails in the ground wood market. While most of the business transacted of late has been along routine lines the industry is in a strong position statistically. Production both in this country and abroad has been restricted and there are no undue accumulations. Prices of both domestic and imported mechanical pulp are firm.

Chemical Pulp

No radical changes were reported in the chemical pulp market. Offerings of both imported and domestic pulp are about sufficient to take care of current requirements. Prices are unchanged. Imported bleached sulphite is still quoted at from $3.25 to $4.25, on dock, Atlantic ports; easy bleaching is selling at from $2.80 to $3.05.

Old Rope and Bagging

The old rope market was rather quiet during the past week. Domestic No. 1 old manila rope is in fairly good demand while imported manila rope is only in moderate request. Mixed rope is moving in seasonal volume. The bagging market is fairly steady. Scrap bagging and gunny are moving into consumption at a normal pace.

Rags

Paper mill interest in the domestic rag market is fairly satisfactory. Some improvement was noticed in the demand for cotton cuttings. Roofing rags are showing more activity than of late. Mixed rags are steady and unchanged. Prices are holding to previously quoted levels, in most instances. The position of the imported rag market is unchanged.

Waste Paper

Collections of paper stock are said to be improving, now that weather conditions are becoming more favorable. The lower grades of waste paper continue to exhibit weakness with the board mills apparently showing little interest. The better grades of paper stock, however, are exhibiting a strong undertone, with prices steady to firm.

Twine

Demand for the various grades of twine is gradually improving and with the approach of Easter and spring time, consumption of the various grades should expand materially. Inquiries for future needs are said to be numerous. Prices are holding to previously quoted levels, in most instances, and shading is infrequent.

DALHOUSIE MILL TO OPEN

(*Continued from page 27*)

"It was not found possible to bring the full equipment at the Madawaska mill into full operation as rapidly as anticipated. As a result of this and largely reduced profits from the operation of lumber department, earnings for the year have been adversely affected. In addition, extensions to plant resulted in largely increased interest charges, though a part only of the added plant capacity became productive during the past year.

"During the year under review, plant expansion at Edmundston was completed. An additional 55-ton per day catalog paper machine was added to the Madawaska mill, coming into operation on January 1, 1930. A bleached sulphite pulp mill at Athol, New Brunswick, of a daily capacity of 150 tons, has been under construction by Restigouche Company and should be in operation by the end of March. The installation of the second catalog machine at Madawaska properly balances the ground wood and catalog paper departments and utilizes electrical power previously unused and being paid for under contract.

"Your company's output for sale now amounts to:

	Tons per day
Sulphite bond and waxing papers	150
Paper board	140
Catalog paper	110
Unbleached sulphite pulp	60
Total	460

"With the addition of bleached sulphite production of the Athol mill above referred to, total production per day for sale by the end of March will be 610 tons; in addition to which, as you know, your company has a large output of lumber and miscellaneous products."

The annual meeting will be held at Plaster Rock, N. B., on March 12.

$15,000,000 Project for British Columbia

A dispatch from Maillardville, B. C., says: A project entailing the expenditure of $15,000,000 may be launched in Coquitlam municipality in the near future.

Reeve R. C. MacDonald states that a California concern has acquired options on a site for a mill and timber limits within the municipal boundaries, and adjoining the Fraser Mills, and that the company intends to erect a paper mill.

The site is desirable for any such project, as the Fraser River provides transport facilities, while the Canadian Pacific Railway is close at hand. The industrious residents of the French-Canadian settlement at Maillardville are also an attraction for those seeking a desirable site for an industry, say municipal officials.

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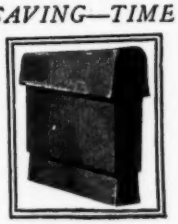

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Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, March 5, 1930.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Both the pulp and the powder are in seasonal request. Prices are steady. The pulp is still quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¾ cents to 4½ cents per pound.

BLEACHING POWDER.—Steadiness prevails in the bleaching powder market although trading was rather light during the past week. Shipments against contract are proceeding at a normal pace. Prices are generally holding to schedule. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in drums, at works.

CASEIN.—Some improvement was noticed in the casein market. Prices are steady. Domestic casein is quoted at from 14 cents to 16½ cents per pound, while Argentine standard ground is selling at from 14½ cents to 15 cents, and finely ground at from 15 cents to 15½ cents per pound.

CAUSTIC SODA.—Conditions in the caustic soda market are fairly satisfactory. The contract movement is well up to average. Prices are holding to previously quoted levels. Solid caustic soda is quoted at from $2.90 to $2.95, and the flake and the ground at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is exhibiting a strong undertone. Contract shipments are going forward to the mills in good volume. Prices remain unaltered. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is selling at from $8 to $13.

CHLORINE.—Demand for chlorine is fairly persistent and producers are reported to be well sold ahead. Shipments against contract are proceeding at a steady pace. The recently revised prices are being maintained. Chlorine is quoted at $2.50 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is moderately active. Prices are irregular. The grades of gum rosin used in the paper mills are quoted at from $7.90 to $8.60 per 280 pounds in barrels, on dock. Wood rosin is now selling at from $6.00 to $6.50 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Paper mill demand for salt cake has quietened down. Offerings are still decidedly scarce and the market continues to exhibit a strong tendency. Prices are steady to firm. Salt cake is quoted from $22 to $25.00 per ton, while chrome salt cake is selling at from $20 to $21 per ton.

SODA ASH.—Trading in the soda ash market was fairly active during the past week. The contract movement was satisfactory for the time of year. Prices are holding to previously quoted levels, in most instances. Contract quotations on soda ash, in car lots, at works, are as follows: in bags, $1.32½; and in barrels, $155.

STARCH.—Most of the business transacted in the starch market during the past week was along routine lines. Supplies are moving into consumption in fair volume for the season. Special paper making starch is now quoted at $3.72 per 100 pounds, in bags, and at $3.99 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—The sulphate of alumina market continues to display strength. Contract shipments are going forward with regularity. Prices remain unaltered, in most instances. Commercial grades are still quoted at from $1.40 to $1.55 and iron free at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Prices are holding to schedule. Sulphur is quoted at $18 per ton, at mine, for orders of 1,000 tons, or over, on yearly contracts, and at $20 per ton for any smaller quantity over the same period. On spot and near by car loads the quotation is still $21 per ton.

Market Quotations

Paper
(F. o. b. Mill)

Ledgers	11.00	@	38.00
Bonds	9.00	@	53.25
Writings—			
Extra Superfine	14.00	@	32.00
Superfine	14.00	@	32.00
Tub sized	10.00	@	15.00
Engine sized	8.00	@	11.00
Book, Cased—			
S. & S. C.	6.00	@	7.50
M. F.	5.75	@	7.00
Coated and Enamel	7.50	@	12.00
Lithograph	7.50	@	12.00
Tissues—Per Ream—			
White No. 1	.75	@	1.00
Anti-Tarnish	1.35	@	1.90
Colored	1.00	@	2.00
White No. 2	.75	@	.80
Kraft	1.00	@	1.10
Manila	.75	@	.80
Kraft—			
No. 1 Domestic	6.00	@	6.50
No. 2 Domestic	3.87½	@	5.00
Southern	3.75	@	4.50
Imported	6.50	@	7.00
Manila—			
No. 1 Jute	9.00	@	9.25
No. 2 Jute	7.75	@	8.50
No. 1 Wood	4.75	@	5.25
No. 2 Wood	4.00	@	4.50
Butchers	3.75	@	4.25
Fibre Papers—			
No. 1 Fibre	5.00	@	5.50
No. 2 Fibre	4.75	@	5.25
Common Bogus	2.75	@	3.00
Screenings	3.00	@	3.25
Card Middles	4.00	@	5.00
Glassine—			
Bleached, basis 25 lbs.	13.00	@	16.00
Bleached, basis 20 lbs.	15.00	@	16.00

(Delivered New York)

News, per ton—			
Rolls, contract	62.00	@	—
Rolls, spot	62.00	@	—
Sheets	67.00	@	—
Side Runs	47.00	@	52.00
Boards—per ton—			
News	37.50	@	—
Straw	52.50	@	—
Chip	35.00	@	—
Binders' Boards	65.00	@	70.00
Wood Pulp	90.00	@	95.00
65 Test Jute Liner	45.00	@	47.50
85 Test Jute Liner	50.00	@	55.00
Sgl. Mla. Ll. Chip	47.50	@	50.00

Mechanical Pulp
(On Dock)

No. 1 Imported—			
Moist	30.00	@	32.00
Dry	32.00	@	34.00

(F. o. b. Mill)

No. 1 Domestic	28.00	@	32.00
Screenings	15.00	@	20.00

Chemical Pulp
(On Dock, Atlantic Ports)

Sulphite (Imported)—			
Bleached	3.25	@	4.25
Easy Bleaching	2.80	@	3.05
No. 1 strong unbleached	2.65	@	2.75
Mitscherlich unbleached	2.70	@	3.00
No. 2 strong unbleached	2.40	@	2.60
No. 1 Kraft	2.30	@	2.50
No. 2 Kraft	2.25	@	2.40
Sulphate—			
Bleached	3.40	@	3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—			
Bleached	3.20	@	4.75
Easy Bleaching Sulphite	2.65	@	3.00
News Sulphite	2.50	@	2.70
Mitscherlich	3.00	@	3.25
Kraft (Domestic)	2.10	@	3.30
Soda Bleached	3.10	@	3.25
Sulphate Screenings—			
Coarse	.75	@	.95
Refined	1.65	@	1.85

Domestic Rags
New Rags
(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	9.50	@	10.50
New White, No. 2	7.50	@	8.00
Silesias No. 1	7.50	@	8.00
New Unbleached	10.50	@	11.00
New Blue Prints	5.25	@	5.50
New Soft Blacks	5.25	@	5.75
Blue Overall	7.25	@	7.75
Washables	4.75	@	5.25
Fancy	5.50	@	6.00
Mixed Khaki Cuttings	4.75	@	5.25
Pink Corset Cuttings	8.00	@	8.50
O. D. Khaki Cuttings	5.15	@	5.75
Men's Corduroy	3.75	@	4.25
New Mixed Blacks	3.50	@	3.75

Old Rags

White, No. 1—			
Repacked	5.50	@	6.00
Miscellaneous	4.50	@	5.00
White, No. 2—			
Repacked	3.00	@	3.50
Miscellaneous	2.50	@	2.75
St. Soiled, White	2.00	@	2.15
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	2.00
Black Stockings	3.25	@	3.75
Roofing Rags—			
Cloth Strippings	1.70	@	1.80
No. 1	1.70	@	1.80
No. 2	1.55	@	1.65
No. 3	1.30	@	1.40
No. 4	1.25	@	1.35
No. 5A	.90	@	1.05

Foreign Rags
New Rags

New Dark Cuttings	2.50	@	3.00
New Mixed Cuttings	2.75	@	3.25
New Light Silesias	7.00	@	7.50
Light Flannelettes	7.50	@	8.00
Unbleached Cuttings	10.00	@	11.00
New White Cuttings	10.00	@	10.50
New Light Oxfords	7.00	@	7.50
New Light Prints	5.50	@	6.50

Old Rags

No. 1 White Linens	7.25	@	8.00
No. 2 White Linens	5.75	@	6.75
No. 3 White Linens	4.75	@	5.25
No. 4 White Linens	3.00	@	3.50
No. 1 White Cotton	5.50	@	6.50
No. 2 White Cotton	4.50	@	5.50
No. 3 White Cotton	3.00	@	4.00
No. 4 White Cotton	2.00	@	2.10
Extra Light Prints	2.75	@	3.25
Ord. Light Prints	2.25	@	2.50
Med. Light Prints	1.95	@	2.10
Dutch Blue Cottons	2.20	@	2.35
French Blue Linens	2.75	@	2.85
German Blue Linens	2.35	@	2.55
German Blue Cottons	2.10	@	2.20
Checks and Blues	1.85	@	2.00
Lindsay Garments	1.85	@	1.95
Dark Cottons	1.50	@	1.55
Old Shopperies	1.45	@	1.50
New Shopperies	1.40	@	1.45
French Blues	2.10	@	2.25

Old Rope and Bagging
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.50	@	1.60
Domestic	1.60	@	1.70
Wool Tares, light	1.60	@	1.65
Wool Tares, Heavy	1.60	@	1.70
Bright Bagging	1.60	@	1.70
Small Mixed Rope	1.25	@	1.40
Manila Rope—			
Foreign	4.25	@	4.40
Domestic	4.25	@	4.50
New Burlap Cut	2.75	@	3.00
Hessian Jute Threads—			
Foreign	3.50	@	4.00
Domestic	3.25	@	3.50

Old Waste Papers
(F. o. b. New York)

Shavings—			
Hard, white, No. 1	3.00	@	3.25
Hard, white, No. 2	2.40	@	2.55
Soft, White, No. 1	2.40	@	2.55
White envelope cuttings	2.90	@	3.10
Flat Stock—			
Stitchless	1.45	@	1.55
Overissue Mag.	1.45	@	1.55
Solid Flat Book	1.40	@	1.50
Crumpled No. 1	1.00	@	1.10
Solid Book Ledger	2.00	@	2.10
Ledger Stock	1.40	@	1.50
New B. B. Chips	.45	@	.55
Manilas—			
New Env. Cut	2.40	@	2.60
New Cuttings	1.50	@	1.75
Extra No. 1 old	1.25	@	1.35
Print	.60	@	.65
Container	.40	@	.50
Bogus Wrapper	.60c	@	.65
Old Kraft Machine Compressed bales	1.65	@	1.75
News—			
No. 1 White News	1.65	@	1.75
Strictly Overissue	.55	@	.65
Strictly Folded	.45	@	.55
No. 1 Mixed Paper	.25	@	.30
Common Paper	.15	@	.65

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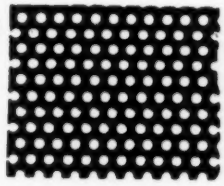
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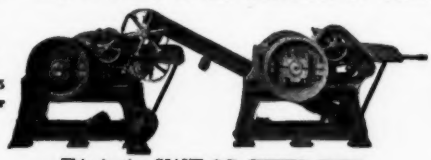
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500 Tons Daily

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Twines
(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.25
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished India—			
Basis	.13	@	.14
Paper Makers Twine			
Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Amer. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¾
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.06¼	@	.06½
Southern Kraft	4.25	@	4.50
No. 2 Kraft	.04	@	.04¼
Wood Tag Boards	.04¼	@	.06¾
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	42.50
Solid News	47.50	@	—
Solid News	40.00	@	45.00
Manila Lined Chip	50.00	@	55.00
Container Lined—			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cuttings	2.60	@	2.65
No. 1 Soft Shavings	2.10	@	2.15
No. 1 Mixed	.60	@	.70
No. 2 Mixed	.50	@	.60
Ledger & Writings	1.25	@	1.35
Solid Books	1.05	@	1.10
Blanks	1.60	@	1.65
Krafts	1.65	@	1.75
New Kraft Cuts	2.15	@	2.25
Manila Envelope Cuttings	1.75	@	1.80
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.60	@	.70
Folded News (overissue	.60	@	.65
Old Newspapers—			
No. 1	.60	@	.65
No. 2	.50	@	.55
Mixed Papers—			
No. 1	.40	@	.50
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.08	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.09	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.09	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.04	@	.05½
Manila No. 2	.03	@	.04
No. 2 Kraft	.04¾	@	.05
No. 1 Kraft	.05	@	.06
Common Bogus	.03½	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	37.50	@	38.50
Chip Board	32.50	@	35.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.10½	@	.11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05½	@	.06
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.20	@	3.25
No. 2 Hard White	2.75	@	3.00
No. 1 Soft White	2.80	@	2.90
No. 2 Soft White	1.80	@	1.90
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.85	@	1.90
Writing Paper	1.30	@	1.40
No. 1 Books, heavy	1.25	@	1.35
No. 2 Books, light	.90	@	1.00
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	.40	@	.50
Container Manila	.25	@	.35
Old Kraft	1.60	@	1.70
Common paper	.15	@	.20
No. 1 Mixed Paper	.15	@	.20
Straw Board, Chip	.40	@	.50
Binders Board, Chip	.35	@	.45
Overissue News	.60	@	.70
Old Newspaper	.25	@	.30

Domestic Rags (Old)

White, No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
M. G.	7.00		—
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings (Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.65	@	1.75
Repacked	.01½	@	.01¾
No. 2	1.20	@	1.25
No. 3 (Roofing)	1.10	@	1.20
No. 4	1.00	@	1.15
No. 5A	.75	@	.85
B	.65	@	.75
C	.65	@	.75

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.06¼	@	.06½
No. 2 Kraft	.03¾	@	.05
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print Rolls	61.50	@	—
Straw Boards, rolls .009	52.50		
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated Newsboard			
Bender	65.00	@	80.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.40	@	2.50
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	2.35	@	2.45
No. 1 Books, Heavy	1.50	@	1.55
No. 1 Books, Light	—	@	1.15
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	.90	@	1.00
White Blank News	1.60	@	1.70
Old Kraft	—	@	1.50
Print Manila	.80	@	.90
No. 1 Mixed Paper	—	@	.27½
Overissue News	.45	@	.55
Old Newspapers	.45	@	.50
Box Board, Chip	.45	@	.50

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.40	@	1.55
Manila Rope—			
Foreign	—	@	4.40
Domestic	—	@	4.50
Transmission Rope	—	@	2.75
Mixed Strings	.90	@	1.00
Jute Wool Strings	1.00	@	1.05
Jute Carpet Threads	1.05	@	1.15
Scrap Burlaps	—	@	1.35
Scrap Sisal	1.55	@	1.75
Scrap Sisal for shredding	1.75	@	2.00
Wool Tares, heavy	1.60	@	—
New Burlap Cutting	1.90	@	2.00
Australian Wool Pouches	3.00	@	3.12½

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.08½	@	—
Silesias, No. 1	.06	@	.06¼
New Unbleached	.09¾	@	—
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¼	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.05	@	—
Corduroy	.03	@	.03¼
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.30
Miscellaneous	1.75	@	1.90
Black Stockings	—	@	4.00
Roofing Stock—			
No. 1	1.65	@	1.75
No. 2	1.40	@	1.50
No. 3	1.05	@	1.10
No. 4	1.10	@	1.15

Foreign Rags
(F. o. b. Boston)

Dark Cottons	1.45	@	1.50
New No. 1 Shirt Cuttings	9.00	@	9.50
Dutch Blues	2.00	@	2 12½
Lace Curtains	4.75	@	5.00
New Checks & Blues	4.25	@	4.60
Old Fustians	1.90	@	2.00
Old Linsey Garments	1.80	@	1.85

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¼	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	11.50	@	—
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.80	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.00	@	—
White, No. 2	2.00	@	2.25

(Delivered Toronto)

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	31.00	@	32.00
Sulphite easy bleaching	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	77.00	@	78.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writings	1.50	@	—
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

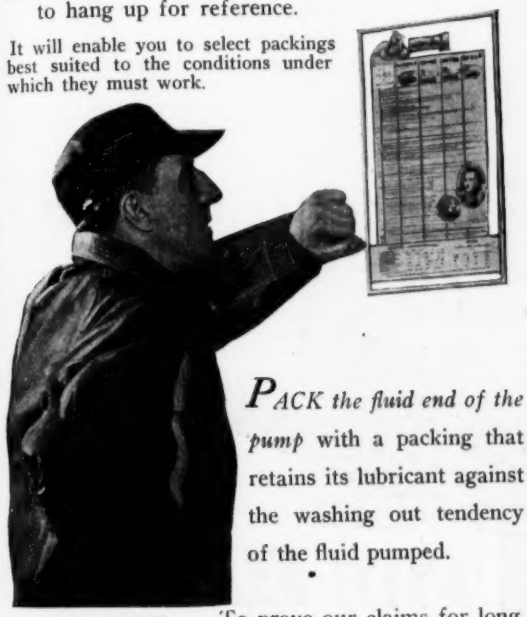
Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09¼	@	.10
Fancy Shirt Cuttings	.06	@	.06½

Select Packings Intelligently

Send for this "A.B.C." Chart
to hang up for reference.

It will enable you to select packings best suited to the conditions under which they must work.



PACK the fluid end of the pump with a packing that retains its lubricant against the washing out tendency of the fluid pumped.

For Steam (Superheat and Compressed Air

For Water (Hot and Cold) Calcium Brine, Centrifugal and Reciprocating Pumps.

For Caustic Soda, Acids, Alkalis.

For Gasoline, Naphtha and all Distillates of Petroleum.

To prove our claims for long satisfactory service, let us send you without charge or obligation working samples of these packings to test under your own conditions. State condition of service and size packing desired.

To avoid shaft friction, a packing must have sufficient lubricant, and the lubricant must be such as will resist the washing out tendency of the fluid it comes in contact with.

The packings listed on this chart are designed to give long, satisfactory service under indicated conditions.

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Sole Manufacturers

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Name .....
Position .....
Firm .....
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